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Government Announces Pulp Allocations

War Production Board Names Rayonier, Inc., As Government Supplier This Month and Amends Original Order of January 9—List of Producers and Individual Tonnages With Paper Grades Given.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 28, 1942—All sulphite pulp allocated for special purposes this month under General Preference Order M-52 will be assigned to Rayonier, Inc., one of the country's largest producers, the War Production Board announced today.

Under the original order, issued January 9, 4,200 tons of sulphite pulp were to have been set aside for the relief of the regular customers of three producers whose plants are widely engaged in war work—Rayonier, Eastern Corporation, and Brown Company.

Eastern Corporation and Brown Company, according to information received by WPB, are in a position to take care of their customers at this time without drawing upon other producers for relief tonnage under the allocation plan.

Under an amendment to the allocation schedule, Rayonier will receive the entire January allotment, which must be distributed among its customers under terms set forth in the original order.

Amendment to Preference Order M-52

(a) The "Allocation Schedule of Sulphite Wood Pulp" attached to Section 1027.1Z General Preference Order M-52 is hereby amended as follows:—

Rayonier, Inc., government supplier, 4200, total scheduled allocated tonnage per month:

Producer	Individual Producers' Schedule Allocated Tonnage per month	Designation of Brand or Grade used commercially by Producer
Algonquin Paper Corp.	34	Unbl. Sulphite
Brown Co.	257	Bl. and Unbl. Sulphite
Consolidated Water Power	145	Bl. Sulphite
Detroit Sulphite	48	Unbl. Sulphite
Dexter Sulphite	38	Bl. Sulphite
Hammermill Paper Co.	103	Bl. Sulphite
Eastern Corp.	120	Bl. Sulphite
Great Northern Paper Co.	60	Unbl. Sulphite
Goveton Paper Co.	40	Bl. Sulphite
International Paper Co.	137	Bl. Sulphite
Mount Tom Sulphite Pulp Co.	21	Bl. Sulphite
Parker-Young Co.	34	Bl. Sulphite
J. & J. Rogers & Co.	20	Bl. Sulphite
Anacortes Pulp Co.*	39	Raybook
Badger Paper Mills	31	Wet Lap Bond Bleached
Castanes Paper Co.	42	Wet Lap Soft Book Bl.
Champion Paper & Fibre Co.	75	Aspen Bl. Sulphite
Columbia River Paper Mills	42	Col. River Unbl. Rolls
Coos Bay Pulp Corp.*	37	Raybook
Crown Zellerbach Corp.	267	(Cames Strong Unbl. and West Lynn Unbl.)
Falls Pulp & Paper Co.	21	Wet Lap Newsgrade Unbl.
Fibreboard Products, Inc.	34	Fibreboard Unbl. Rolls
Flembeau Paper Co.	24	Wet Lap Soft Book Bl and Wet Lap Easy Bleaching Unbl.
Gould Paper Co.	13	Wet Lap Newsgrade Unbl.
Hawley Pulp & Paper Co.	55	Newsgrade Unbl. Rolls
Hoberg Paper Mills	53	Wet Lap Hardwood Unbl.
Hollingsworth & Whitney	82	(Weyerhaeuser Strong Unbl. & Wet Lap Strong Unbl.)
Inland Empire Paper Co.	17	Newsgrade Unbl. Rolls
Kennebec Pulp & Paper Co.	27	Wet Lap Easy Bl. Unbl.
Kimberly Clark Corp.	112	Wet Lap Strong Unbl.
Maine Seaboard Paper Co.	45	Wet Lap Newsgrade Unbl.
Marathon Paper Mills Co.*	57	Soundview Bond. Bl.
Minnesota & Ontario Paper Co.	74	Wet Lap Newsgrade Unbl.
Munising Paper Co.	38	Wet Lap Book Bl.
Nokoosa Edwards Paper Co.	56	Wet Lap Book Bl.
Northern Paper Mills	65	(Wet Lap Book Bl. and Wet Lap Newsgrade Unbl.)
Northwest Paper Co.	36	(Wet Lap Book Bl. and Wet Lap Easy Bl. Unbl.)
Oregon Pulp & Paper Co.	49*	Col. River Unbl. Rolls
Oxford Paper Co.	107	Soft Book Bl.
Penobscot Chemical Fibre Co.	43	Penobscot Bond Bl.
Port Huron Sulphite & Paper Co.	25	
Puget Sound Pulp & Timber Co.	198	Pudget Sound Strong Unbl.
Racquette River Paper Co.	16	Wet Lap Strong Unbl.
Rayonier, Inc.	518	Bl. & Unbl.
Rhinelander Paper Co.	28	(Wet Lap Bl. and Wet Lap Unbl.)
St. Croix Paper Co.	23	Wet Lap Newsgrade Unbl.
St. Regis Paper Co.	48*	Raybond or other
Soundview Pulp Co.	282	(Soundview Bond Bl. and Soundview Book Bl.
Spaulding Pulp & Paper Co.	31	Strong Unbl.
Sterling Pulp & Paper Co.	37	"Slush" Bl. and Unbl.
Wausau Paper Mills Co.	29	Wet Lap Bl. and Wet Lap Unbl.
West Virginia Pulp & Paper Co.	75*	Canadian Unbl. and Wet Lap Bl.
Weyerhaeuser Timber Co.	268	Weyerhaeuser Bond Bl. and Weyerhaeuser Book Bl.
Wolf River Paper & Fiber Co.	14	Wet Lap Newsgrade Unbl.
	4200	

(b) This Amendment shall take effect immediately.

* Contribution made by releasing pulp purchased from other producer.

Plan to Increase Supply of Hemlock Timber

Wisconsin Conservation Commission Announces Small Nursery Plantings of Hemlock Are Practicable—Demand For Blue Print Paper Heavy—Union Objects To Sunday Work—Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., January 26, 1942 — Measures which will increase the supply of hemlock timber in Wisconsin forests are being taken by the Wisconsin Conservation Commission, acccording to C. L. Harrington, superintendent of parks and forests. A survey has revealed that no new hemlock is growing in certain sections. The only large stands remaining are in the Flambeau River region and in the Menominee Indian Reservation. The Flambeau supply includes 26,000 acres. One tract of 19000 acres is owned by the State, having been purchased from the Tomahawk Kraft Paper Company, Tomahawk, Wis. Negotiations are now under way to acquire 13,000 acres owned by the Edward Hines Lumber Company.

While it was generally believed that hemlock could not be replaced by nursery plantings, that difficulty has been overcome. Seeds are small and difficult to handle, acccording to Mr. Harrington, but methods now being tried are meeting with success. It is not practical to plant large plantations, however.

Demand for Blue Print Paper Heavy

At least 60% of the production at the Fox River Paper Corporation, Appleton, Wis., is now going into defense orders. This represents direct deliveries, but the proportion may be increased by other indirect defense purchases, officials declare.

Demand is heaviest for blue print paper not only for the War and Navy departments, but also for the aircraft, steel and tank manufacturers and the electric companies. Because of its short life, only a small inventory is maintained.

Although no priorities have been placed on paper, voluntary increases of production to take care of defense demands have been made by the mills. The Fox River company has placed each of its customers on a monthly quota basis.

To assist local paper mills and allied industries, the Office of Production Management at Washington has established a branch office in Appleton. Paul W. Romig of Green Bay, Wis., has been placed in charge.

Work on Paper Institute Building Starts

Construction has been started by the Institute of Paper Chemistry, Appleton, Wis., on a three-story machine building. It will be 40 by 123 feet in size, and will be built of concrete, stone and steel. A tunnel 50 feet long and 5 feet wide will connect the structure with the other Institute buildings. The contract has been awarded to the Ben G. Ganther Company of Oshkosh, Wis., for general construction, estimated to cost $55,000. This does not include plumbing, heating and electrical work. The building will house additional experimental paper mill machinery so the operations of the research departments can be expanded.

Kimberly-Clark Building Addition

Kimberly-Clark Corporation is building an addition to its main offices at Neenah, Wis., estimated to cost $10,000. The structure will measure 26 by 61 feet, one story, and will be of concrete. Contract has been awarded to Fluor Brother Construction Company, Oshkosh, Wis.

Appleton Salvage Plan Successful

Under the Appleton Plan used at Appleton, Wis. for the collection of waste paper, more salvage has gone to dealers in six weeks than is usually collected in one year. The total gathered under a districting plan once a month by Boy Scouts and Girl Scouts was 73½ tons in the six-week period. Householders bundle the newspapers, and place miscellaneous paper in cartons. It is delivered to street intersections, where trucks from the mill supply houses gather it up.

Mill Unions Buy Defense Bonds

Paper mill unions are helping in the war effort by using their surplus funds to buy defense bonds. At the Marathon Paper Mills Company, Menasha, Wis., the union bought $1,500 worth. Bonds totalling $1,000 were bought by the union at Nekoosa-Edwards Paper Company, Nekoosa, Wis. Employees of the Whiting-Plover Paper Company, Stevens Point, Wis., have contributed $1,045 to the Red Cross, an average of $4.20 per person.

Fire Damages Bag Plant

A fire at the Virginia Bag and Paper Company, Milwaukee, Wis., January 14 caused damage to two frame buildings and hundreds of tons of paper, rubber and rags. Damage to the buildings was estimated at $7,000 to $10,000, but no estimate was placed on the loss of stock.

Union Objects to Sunday Work

A picket line of approximately 150 men was thrown around mills of the Fox River Paper Corporation, Appleton, Wis., early Sunday morning, January 18, and they remained for about two and a half hours. They were there to dissuade workers from working on a Sunday shift, but dispersed when it was found that the mill would not operate.

According to E. A. Oberweiser, president, a notice had been posted earlier in the week asking for volunteers to work on a Sunday shift because of the tremendous demands on the company for defense production. Quite a number of workers responded. When the company learned, however, that a union meeting had been held on Saturday night at which a decision was made to picket the plant, officers decided not to operate. Negotiations are in progress by the union for a new labor contract.

Paper Men Elected to Banks

L. F. Nelson, president of the Badger Tissue Mills, Kaukauna, Wis., has been reelected president of the Farmers and Merchants Bank at Kaukauna. The Citizens National Bank of Stevens Point, Wis., has

elected E. A. Oberweiser, president of Fox River Paper Corporation, Appleton, Wis., as chairman of the board. He formerly was president of the bank and is succeeded by Arthur C. Kingston. E. A. Meyer, president and general manager of the Badger Paper Mills, Inc., has been reelected a director of the Peshtigo State Bank.

Elected to Head Safety Council

L. C. Smith, personnel director of the Thilmany Pulp and Paper Company, Kaukauna, Wis., was elected chairman of the Outagamie County Safety Council at the annual meeting at Appleton, Wis., January 19. The council is engaged in promoting traffic safety. C. E. Murray of the Kimberly-Clark Corporation's mill at Niagara, Wis., has resigned from the Marinette Safety Council, due to the fact that he is leaving for military service.

James H. Kimberly Honored

James H. Kimberly of the Kimberly-Clark Corporation, Neenah, Wis., was honored last week by the Neenah Junior Chamber of Commerce. He was given a distinguished service award because of his leadership in civic activities. He has been especially prominent in boys' work.

Paper Men Form Exporters Council

The United States Paper Exporters Council, Inc., has been organized in response to urgent need as the trade association of paper exporters who finance their business direct with foreign firms. The officers of the Council consist of officials of houses long well known in the trade. They are: President, E. Walker of the Walker Goulard Plehn Company, Inc., whose company has had 35 years' experience in the export field —Vice President, Eli deVries of Parsons & Whittemore, Inc., an old and well established export house organized in 1908—Secretary-Treasurer, Frank W. Smith of National Paper and Type Company, whose company has been in the export field for 43 years. Besides these, the directors are George Cobean of Bulkley Dunton & Co., one of the largest and oldest established houses in the U. S. market, Fred Strype of Fred C. Strype, Inc., which firm has been established for 31 years, and James F. Capen of A. M. Capen's Sons, Inc., a firm engaged in the paper export business for the past 50 years.

Javits & Javits, New York City attorneys, are legal advisers to the council.

The objects of the council are to cooperate with the Federal Government in facilitating the export of paper and paper products at reasonable prices in such amounts as will be of maximum benefit and service to foreign buyers friendly to our country and at the same time fair to domestic military and civilian requirements. The council will be in a position to compile the necessary facts and figures relating to the paper export trade for the information of government agencies; to crystallize the views of exporters in dealing with paper export problems; and to exert its influence to eliminate practices inimical to the development of good will of foreign buyers and consumers for our Government and for paper exporters.

Leading members of the paper export trade have recently conferred with officials of the Office of Price Administration and presented for their information facts, figures, and established practices bearing on price ceilings for paper exports. It was felt that these officials attained a clear understanding of paper export problems and that good progress was made toward clarification of paper exporters' problems.

As paper exporters' problems are entirely different from those encountered in the domestic paper trade the Council can serve a most constructive purpose in inculcating principles of fair dealing with foreign buyers, and in suggesting trade customs and fair trade practices designed to achieve this result. The problems involved in the establishment of price ceilings for paper exports which shall be fair to the exporter laboring under heavily increased costs, curb profiteering by irresponsible exporters, and encourage good will toward the United States in foreign countries, require a medium through which the position and views of the paper exporter can be ascertained and developed. This purpose the Council can also serve admirably.

As is well known in this country, one of the impediments to greater participation in foreign trade has been the slowness of American industry to accommodate itself to the local customs around the world. An exporters' Council such as this has a special benefit to the country, particularly at this time, because its members are acquainted with the local conditions in other lands and know what is necessary for American business to accommodate itself to those conditions. This, among other of its activities, will therefore be very helpful not only in the conduct of the war but in the peace which must follow our victory, in communicating to manufacturers and others what the local requirements are and how our manufacturers and distributors can best serve our country and its commerce and industry.

Every exporter whose principal interest is devoted to the export of paper and paper board and who finances his business directly is invited to apply for membership in the Council. Application should be addressed to the Secretary of the Council, Frank W. Smith, Room 1041, 120 Wall street, New York City, and should state the applicant's position in the paper export field.

Machine Div. of St. Regis Signs Agreement

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., January 24, 1942—Announcement is made here of the signing of a new working agreement between employees of the machine division of the St. Regis Paper Company and officials of the concern. The employees became the first industrial group in this section to approve payroll allotment in the purchase of Defense Bonds, taking such action last week. Arrangements will be made at the plant whereby weekly installments will be deducted from the pay envelopes for the bonds. The employees heartily endorsed the American Red Cross campaign now in progress and approved collections for this fund. The new contract between the employees and the company, replacing that which expired last year, provides for an increase in wages, union shop, vacations with pay and other features. The formal signing of the agreement is expected to take place this week.

Coated Paper Demand Declines in Chicago

Fewer Catalogues Scheduled For Issue This Year Is Attributed Cause of Falling Off In Orders For Some Coated Papers—Chicago Paper Association Elects Officers — Market News — New Lines.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., January 26, 1942—The priorities and allocation problem as it affects many lines of business is reported to have had a definite effect on the paper business in this area. Particularly is this effect noticeable now as this is the time when catalog business is usually at its peak. Sold so far ahead that they now have nothing to sell, many firms have even ceased to send out catalogs which, of course, has a specific effect on the demand for coated papers. Outside of this type of paper, however, demand continues to hold up to the point of distraction for many hard pressed jobbers. Uncoated papers have not followed the coated grades into a slight case of the doldrums while krafts, tissues and the entire board market are simply up against the problem of trying to allocate what supply there is to make even a few customers happy. In between these two "extremes" are sulphites and the entire bond and ledger grouping where reports indicate that definite tightness prevails with demand increasing as a somewhat hysterical spending spree hits the general public. Meanwhile, waste papers continue to be very much in demand but the cumulative effect of various programs combatting waste has begun to have the desired effect in this area according to both the volunteer collecting groups and the specific market itself.

Weil Re-Elected C. P. A. Head

The Chicago Paper Association, facing one of the most important years in its history, completed the business of electing new officers and directors at the annual meeting on January 13 which was featured by an inspiring talk by Corwine E. Roach, head of the Capital City Paper Company. Equally impressive was the report made by President-elect S. A. Weil covering the work of the Association during the past twelve months. The head of the Association indicated that times of stress had aided in developing an almost perfect record attendance which he hoped would continue throughout 1942 as problems perplexing to the industry could be considered and solved by united effort.

Mr. Weil, treasurer of Joseph Weil & Sons, Inc., was re-elected president and Robert Levinson, president of the Eagle Wrapping Products Company, was re-elected as first vice-president. Henry Weinstein, treasurer of the Western Bag and Paper Company, was selected to fill the office of second vice-president while Robert Knox, highly commended by President Weil for his services to the association. was re-elected secretary-treasurer. Mr. Knox is affiliated with the firm of Knox and Schneider. The officers will make up the board of directors along with L. S. Altholz, Inlander-Steindler Paper Company; William Chukerman, J. Chukerman & Sons, Mortimer Inlander of Inlander Brothers and L. S. Druth, executive head of the Chippewa-Arrow Paper Company.

Mr. Roach, vice-president of the National Paper Trade Association, concentrated his remarks on the need for large buying of Defense Bonds and Stamps, pointed out the anti-inflationary effect of such buying and the hope that paper merchants would follow this democratic way of financing the War.

Merchants Add New Lines

Berkshire Papers, Incorporated, Chicago distributors, have recently announced the acquisition of a number of new lines including the complete line of the Eastern Corporation. Kimberly-Clark's Trufect, Kimfect, Hyfect and Multifect lines have been added as have Sulgrave Cover from the Standard Paper Manufacturing Company; Emco Onion Skin, made by the Esleeck Manufacturing Company and the Peninsular Paper Company's Dubl-Color Duplex Cover. Berkshire Papers also announces full representation of the complete line of Atlantic Bond papers made by the Eastern Corporation. All lines of Atlantic Bond and other papers will be stocked at 450 West Superior street.

Additions to Butler Line

During the week the J. W. Butler Paper Company also released its new January inserts to its catalog which indicated that two lines, Chemist Gummed Papers and Strathmore Courier have been discontinued. To the representative Butler stock has been added Strathmore Troubadour in flat stocks, announcement and envelopes.

New Officers for Potdevin

J. Henry Richmond has been named president of the Potdevin Machine Company. He succeeds his father, Mr. Julian Richmond, president of the company since 1919, who as chairman of the board of directors, will continue in active service.

Robert L. Richmond, brother of the president, has been appointed vice-president while George E. Hampton, the other vice-president, continues in that office. A. Potdevin, founder of the 45 year old company and holder of over 80 patents, remains active as treasurer of the firm as well as its chief designer. A. W. Joyce, for many years cashier, becomes secretary.

The new president, a graduate of Dartmouth College has been with the company since 1932 acting successively as salesman, assistant general manager and vice-president. Mr. Richmond will continue the policies of his father which at present comprise the change-over from manufacturing printing presses, paper bag machinery, paper coating machinery and other converting equipment to the production of defense orders. A good part of the productive capacity of both Potdevin plants is already concentrated on defense contracts.

Robert L. Richmond was first employed as mechanic by Potdevin between terms at Worcester Polytechnic Institute. After becoming a steady employee his technical background soon advanced him to assistant superintendent and then to his present position of vice-president.

Canada To Control All Exports of Pulp

Export Permits Required After February 1 On Shipments of Spruce, Balsam, Hemlock, Jackpine and Poplar — Government To Avoid Any Dislocation of Deliveries To U. S. Mills—Other News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., January 26, 1942—An announcement from Ottawa this week says that as a result of serious local shortages in Canada following heavy demand, certain pulpwood products have been placed on the list of articles for which an export permit must be obtained before they are shipped from Canada.

Minister of Trade MacKinnon made the announcement. He said that the intention is to avoid "any undue dislocation," of normal supplies of pulpwood both for Canadian and United States mills. After February 1 permits will be required covering all shipments from Canada of pulpwood of spruce, balsam, hemlock, jackpine or poplar, either in the form of cordwood or logs.

"It has become necessary to place pulpwood under export control owing to the increased demand both in Canada and the United States which has resulted in an apparent shortage of this material," the trade minister said.

"Furthermore, the timber controller has agreed that no action will be taken to interfere with bona fide contracts concluded prior to Jan. 15, 1942. In other words, it is the intention to administer the application of export control to pulpwood in such a manner as to avoid any undue dislocation of normal supplies both for Canadian and United States mills."

Government Controls All Industry

In Canada the whole pulp and paper industry is now working under controls and priorities which are in some cases specific and in some the result of voluntary allocation of supply.

Under the Wartime Prices and Trade Board there is appointed a whole set of administrators for the pulp and paper industry, acting under a co-ordinator. Indicative of the sweeping control over the industry made possible by Canada's Wartime Prices and Trade Board set-up is the list of co-ordinators now made available and all of whom have their offices in Montreal.

W. H. Howard, K.C., co-ordinator; C. M. Moisan, deputy co-ordinator. Administrators: A. T. Jewett, book and writing papers; C. H. Browne, building papers, etc.; N. E. Wainwright, converted paper products; C. V. Hodder, folding and set-up boxes; G. M. Smith, newsprint; W. H. O'Reilly, paperboard; F. C. Hayes, shipping cases; F. M. Hulbig, wallpaper; C. M. Matheson, wood pulp; S. H. Smith, wrapping paper.

The policy of the Wartime Prices and Trade Board has been to select representatives of industry and business, ordinarily nominated by the industry itself, who act under authority of the board in the execution of its policy. For major industries, such as pulp and paper, a co-ordinator is appointed to direct the work of the specialized administrators for individual industrial branches.

A pulpwood controller has been appointed to work as an assistant to the timber controller.

Already the industry has felt the hand of controllers who work under the Department of Munitions and Supply.

Douglas Lorimer, Chemical Controller, has required the industry to cut down on its use of chlorine, a product which is ordinarily one of the most abundant, but which in wartime is subject to unusual demands. In order that Canada may turn out smoke bombs and flares, as well as other important war materials, Canadians and customers of the industry in other countries, will have to get used to decidedly off-white paper products, particularly among the fine papers.

Industry Has Adopted Voluntary Measures

Numerous voluntary measures have also been taken by the industry itself to help in making its products go around—often at the suggestion of the Dominion government. The splendid job being done by the fine paper makers is an example of the voluntary efforts being made. The policy of the fine paper makers of limiting colors and other specials to save machine time seems to be working out satisfactorily and with a minimum of objections from customers. They have also reduced the number of base weights and sizes in some lines to help speed up and simplify production. It is all a part of Canada's general programme for simplification and elimination of frills designed to save materials in many cases and in others to get greater output from existing production facilities.

In addition to all this the paper industry is, like all other industries, also under the price and wage ceiling regulations for domestic sales. There have been complaints from the Canadian pulp and paper industry spokesmen that United States buyers of pulpwood were able to get supplies in Canada by virtue of their ability to pay higher prices than could Canadian producers who are subject to price control.

Goodrich Co. Effects Big Saving

As a result of a conservation campaign started last year, The B. F. Goodrich Company today reported a saving at the rate of more than 1,000,000 pounds of box, fiber and corrugated board per year used in shipping products, based upon past usage. The report was forwarded to the National Conservation Advisory Committee from the office to T. G. Graham, vice president.

In addition to the conservation of various types of packing board, now urgently needed in the present war effort, the company has inaugurated an intensive campaign in all its factories throughout the country to prevent waste and to salvage all usable materials including scrap rubber, metals of all kinds, waste paper, rags, cans, shipping containers and boxes.

The company is now urging that discarded and worn-out tires and tubes be brought to company tire stores. While having no value except as scrap, the company points out that this material can still be a contribution to the nation's vital rubber supply.

Tentative Program for "Paper Week"

The American Paper and Pulp Association has just issued the tentative program for its 65th annual meeting. All the meetings of the association, together with the allied associations, will be held February 15-20 at the Waldorf-Astoria Hotel, unless otherwise indicated in the program. The Technical Association of the Pulp and Paper Industry will meet at the Commodore Hotel and its program was printed in last week's issue of the PAPER TRADE JOURNAL.

Sunday, February 15, 1942

10:00 A.M. United States Pulp Producers Association, Annual Meeting.
1:00 P.M. United States Pulp Producers Association, Luncheon.
2:00 P.M. United States Pulp Producers Association, Annual Meeting. Continued.
2:00 P.M. The Institute of Paper Chemistry, Board of Trustees (Barclay Hotel).

Monday, February 16, 1942

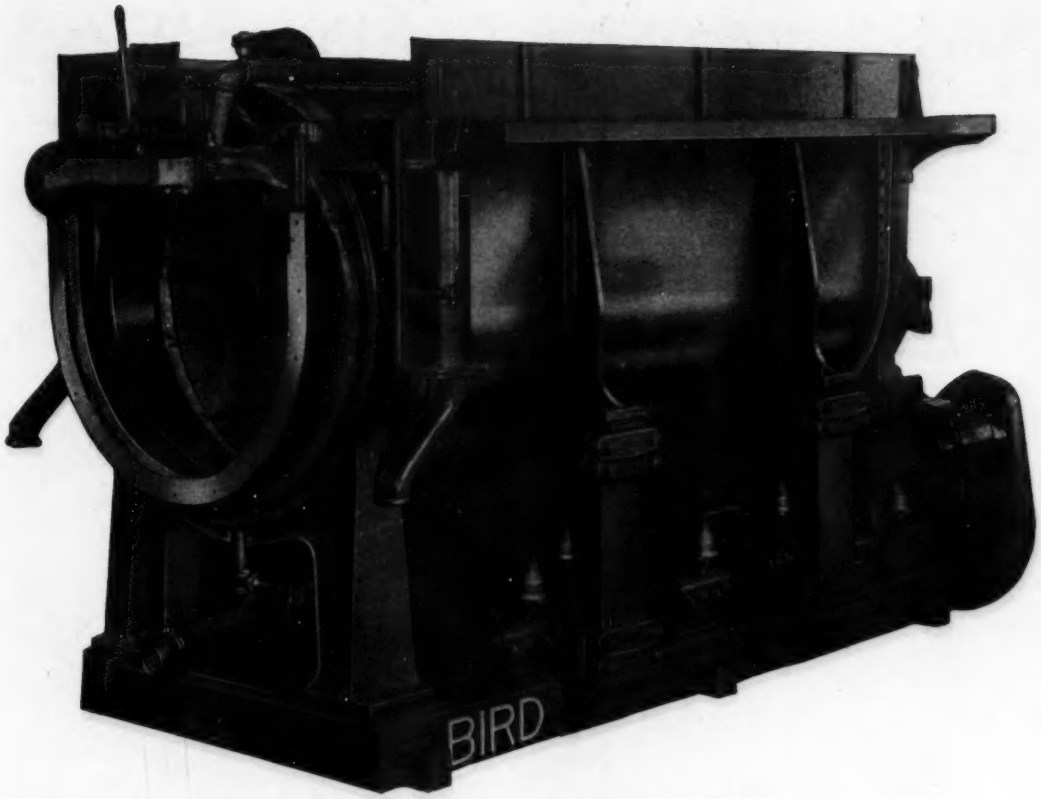
8:00 A.M. American Paper and Pulp Association, Finance Committee—Breakfast.
9:30 A.M. Sulphite Paper Manufacturers Association, Budget Committee.
9:30 A.M. Sulphite Paper Manufacturers Association, Nominating Committee.
9:30 A.M. Technical Association of the Pulp and Paper Industry, General Session (Commodore Hotel).
10:00 A.M. Blotting Paper Manufacturers Association, Annual Meeting.
10:00 A.M. Glazed and Fancy Paper Association, Annual Meeting (Hotel Commodore).
10:00 A.M. Groundwood Paper Manufacturers Association, Annual Meeting.
10:00 A.M. Kraft Paper Association, Executive Committee.
10:00 A.M. Writing Paper Manufacturers Association, Executive Committee.
11:00 A.M. Salesmen's Association of the Paper Industry, Executive Committee and Advisory Board.
11:00 A.M. Sulphite Paper Manufacturers Association Board of Governors.
12:30 P.M. Glazed and Fancy Paper Association—Luncheon (Hotel Commodore).
1:00 P.M. American Paper and Pulp Association, Luncheon Meeting.
2:00 P.M. Technical Association of the Pulp and Paper Industry, 3 Meetings: Water Session; Acid Pulping Session; Chemical Methods of Testing Session.
2:30 P.M. Salesmen's Association of the Paper Industry, Annual Meeting.
3:00 P.M. Groundwood Paper Manufacturers Association, Annual Meeting, Continued.
3:00 P.M. Sulphite Paper Manufacturers Association, Annual Meeting.
3:00 P.M. Writing Paper Manufacturers Association, Thin Paper Group.
3:30 P.M. American Paper and Pulp Association, Committee on Instrumentation Research.
3:30 P.M. American Paper and Pulp Association, Committee on Coordination of Research.
3:30 P.M. American Paper and Pulp Association, Committee on Stream Pollution.
6:00 P.M. Sulphite Paper Manufacturers Association, Waxing Group—Dinner Meeting.

Tuesday, February 17, 1942

9:30 A.M. American Paper and Pulp Association, Technical Committee.
9:30 A.M. Technical Association of the Pulp and Paper Industry, 3 Meetings: Alkaline Pulping Session; Graphic Arts Session; Preparation of Nonfibrous Materials and Coating Session. (Hotel Commodore)
9:30 A.M. Writing Paper Manufacturers Association, 81st Annual Meeting.
10:00 A.M. American Waxed Paper Association. Annual Meeting.
10:00 A.M. Kraft Paper Association, Annual Meeting.
10:00 A.M. Sulphite Paper Manufacturers Association, Unbleached Group.
10:00 A.M. The Tissue Association.
10:30 A.M. Cardboard Manufacturers Association. General Meeting.
11:30 A.M. Cardboard Manufacturers Association, Coated Blanks and Miscellaneous Cardboard Group.
12:30 P.M. Salesmen's Association of the Paper Industry—Annual Luncheon.
1:00 P.M. American Waxed Paper Association—Luncheon.
2:00 P.M. Cardboard Manufacturers Association, Coated Tag Group.
2:00 P.M. Technical Association of the Pulp and Paper Industry, 3 Meetings: Optical Properties and Graphic Arts Session; Forming and Finishing and Stuff Preparation Session; Fundamental Research Session. (Hotel Commodore)
2:00 P.M. The Tissue Association.
2:30 P.M. American Waxed Paper Association, Annual Meeting, Continued.
3:00 P.M. Cardboard Manufacturers Association, Photo Mount Group.
3:00 P.M. Sulphite Paper Manufacturers Association, Manila Group.
3:30 P.M. American Paper and Pulp Association, Committee on Classification and Definitions.
3:30 P.M. American Paper and Pulp Association, Committee on Waste Utilization.
4:30 P.M. American Paper and Pulp Association, Forestry Committee.
6:00 P.M. Sulphite Paper Manufacturers Association, Machined Glazed Group—Dinner Meeting.

Wednesday, February 18, 1942

8:30 A.M. Glassine and Greaseproof Manufacturers Association, Executive Committee—Breakfast Meeting.
9:30 A.M. American Paper and Pulp Association, Executive Committee and Board of Governors.
9:30 A.M. American Paper and Pulp Association, Committee on Biological Control.



LICKING THE TOUGHEST JOB IN TWENTY-FIVE YEARS

In all the twenty-five years that Bird Screens have been on the job, keeping dirt out of paper stock, they've never been of greater value than they are right now. Stock is dirty and getting dirtier. But the users of your papers have learned to expect and to appreciate clean paper.

Look over your screening equipment. If it isn't as good or as up to date as it should be, now is the time to do something about it.

BIRD MACHINE COMPANY, SOUTH WALPOLE, MASSACHUSETTS

BIRD SCREENS

9:30 A.M. Technical Association of the Pulp and Paper Industry, 3 Meetings: Stuff Preparation Session; Mechanical Pulping Session; Heat and Power Session. (Hotel Commodore)
10:00 A.M. Newsprint Manufacturers of the United States.
10:00 A.M. Writing Paper Manufacturers Association, Cover Paper Group.
10:30 A.M. Glassine and Greaseproof Manufacturers Association, Annual Meeting.
11:00 A.M. Specialty Paper and Board Affiliates, Executive Committee.
11:30 A.M. American Paper and Pulp Association, Committee on Public Affairs.
12:00 A.M. Specialty Paper and Board Affiliates, General Meeting.
12:30 P.M. Glassine and Greaseproof Manufacturers Association—Luncheon.
12:30 P.M. Paper Makers Advertising Association—Luncheon. (Hotel Lexington)
1:00 P.M. Specialty Paper and Board Affiliates—Luncheon.
2:00 P.M. Technical Association of the Pulp and Paper Industry, 3 Meetings: Materials of Construction Session; Pulp Purification Session; Container Session. (Commodore Hotel)
2:30 P.M. Specialty Paper and Board Affiliates, Bogus Bristol Group.
2:30 P.M. Writing Paper Manufacturers Association, Bristol Board Group.
3:00 P.M. Association of Pulp Consumers.
3:30 P.M. Specialty Paper and Board Affiliates, Mill Blanks Group.
4:00 P.M. Sulphite Paper Manufacturers Association, Bleached Kraft Group.
7:00 P.M. Paper Club of New York—Dinner (Formal—Gentlemen only).

Thursday, February 19, 1942

9:30 A.M. American Pulpwood Association, Annual Meeting.
9:30 A.M. Technical Association of the Pulp and Paper Industry, 3 Meetings: Fundamental Research Session; Bacterial Control Session; Engineering Research Session. (Commodore Hotel)
10:00 A.M. Specialty Paper and Board Affiliates, Lined Board Group.
10:00 A.M. Sulphite Paper Manufacturers Association, Treated Butchers Group.
10:30 A.M. American Paper and Pulp Association, Committee on Manufacturing.
11:30 A.M. Specialty Paper and Board Affiliates, Tag Board Group.
12:30 P.M. Vegetable Parchment Manufacturers Association—Annual Meeting and Luncheon.
1:00 P.M. Technical Association of the Pulp and Paper Industry — Annual Luncheon. (Hotel Commodore)
2:00 P.M. American Pulpwood Association, Annual Meeting, Continued.
7:00 P.M. American Pulpwood Association — Dinner (informal).

Friday, February 20, 1942

10:00 A.M. American Pulpwood Association, Board of Directors.
10:30 A.M. Technical Association of the Pulp and Paper Industry—Theoretical Fundamentals of the Viscosity of Solutions (Polytechnic Institute of Brooklyn).
2:00 P.M. Technical Association of the Pulp and Paper Industry—Recent Experiments by M. Lauffer (Polytechnic Institute of Brooklyn).

Charge Container Men Fix Prices

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 28, 1942—Eight manufacturers of cylindrical liquid tight paper containers and the trade association of which they are members are charged in a complaint issued by the Federal Trade Commission with engaging in practices, including price fixing, for the purpose and with the effect of restraining and suppressing competition and creating a monopoly in the sale of their products. Respondents named in the complaint are:

Liquid Tight Paper Container Association, 1532 Lincoln-Liberty Building, Philadelphia, and its secretary and manager George J. Lincoln, Jr.; Boothby Fibre Can Company, 84 Linden Park Street, Boston; Gordon S. Smith and George T. Hynes, trading as Champion Container Company, Third and Somerset streets, Philadelphia; Fonda Container Company, Inc., 2150 Erie street, Utica, N. Y.; Menasha Products Company, Menasha, Wis.; Minkoff & Rosenfield Brothers, Inc., trading as Miro Container Company, 557 DeKalb avenue, Brooklyn; Russell Box Company, 200 Boston avenue, Medford, Mass.; Sealright Company, Inc., Fulton, N. Y., and Sutherland Paper Company, Kalamazoo, Mich.

The respondent manufacturers, by agreement, the complaint charges, file with the Association their price lists and abide by such filed prices, and also file invoices covering the sale of their products.

Incidental to and as a result of their agreed policy of selling only at identical delivered prices, notwithstanding differences in the actual freight charges from the various shipping points to given distances, the respective respondent manufacturers, the complaint alleges, arbitrarily and systematically charge and receive larger sums of money for their products from customers located near their respective manufacturing plants than from those located at greater distances. Through the use of such a policy, the complaint charges, the respondent manufacturers force their nearby customers to pay more for their products in order that more distant ones may pay less, deprive the nearby customers of any price advantage by reason of their proximity to the place of manufacture, and thereby arbitrarily and systematically discriminate in price among their respective customers in bad faith in order to suppress competition in price among the respondent manufacturers.

The respondents are allowed twenty days to answer the complaint.

C. F. Rassweiler Appointed

C. F. Rassweiler has been appointed a vice-president of Johns-Manville Corporation, it was announced by Lewis H. Brown, president. Mr. Rassweiler will continue in charge of the company's extensive research and development activities, which now are largely devoted to converting the full production capacity of Johns-Manville to war uses, Mr. Brown said.

For the pulp and paper industry Penn Salt makes

LIQUID CHLORINE • CAUSTIC SODA • ACID AND ALKALI PROOF CEMENTS • PENNPAINT • ALUM • SODIUM ALUMINATE • BLEACHING POWDER • ANHYDROUS AND AQUA AMMONIA • ACIDS • PERCHLORON*

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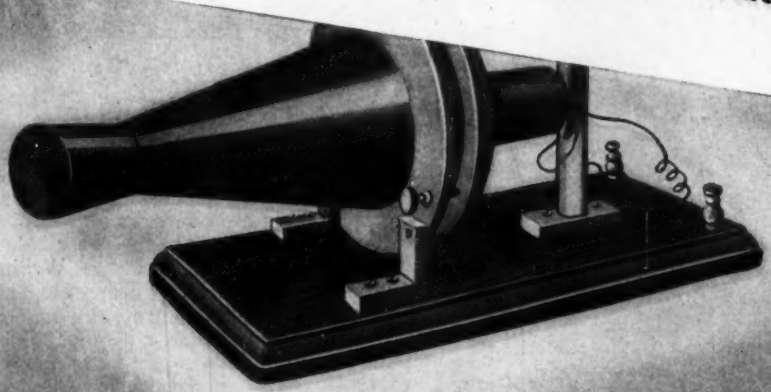

MUTE METAL WAS MADE TO SPEAK .....ALMOST BY ACCIDENT

The alertness of Alexander Graham Bell, a teacher of human mutes, was vital to his discovery of how to make mute metal speak. Experimenting with a harmonic telegraph, he stumbled on the principle of the telephone, was quick to realize its value and to make long-distance speech a reality.

Alertness is important in our business, too. Whether developing a new chemical . . . or improving an existing product . . . or "trouble-shooting" in a customer's plant . . . our men show an alertness that adds new vigor to the solid reputation for integrity in chemical manufacturing which we have earned throughout American industry during the years since 1850.

CHEMISTRY IS THE KEYSTONE OF INDUSTRY

PENNSYLVANIA SALT MANUFACTURING COMPANY

1850 *Chemicals* 1942

1000 WIDENER BUILDING, PHILADELPHIA

BRANCH OFFICES: NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • WYANDOTTE • TACOMA

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Load-Center Power Distribution

The load-center system of electrical power distribution was explained in considerable detail at a meeting for business paper editors, given by the General Electric Company in the auditorium of the company's building at 570 Lexington avenue, New York, on January 23.

General Electric engineers, T. W. McChesney, D. L. Beeman, R. H. Kaufmann, E. M. Hunter and D. E. Craig, discussed the advantages of this system. The subject was also treated extensively in the paper, "The Fundamentals of Industrial Distribution Systems," presented by engineers Kaufmann and Beeman, at the winter convention of the American Institute of Electrical Engineers, held in New York, January 23-30.

The load-center power distribution offers the advantages of saving time, strategic material and simplicity in installation and operation. While the system is not new, it has just been developed to produce the units on a mass-production basis, to meet the demands of rapidly expanding industry and military projects and need for conserving strategic materials.

Power is distributed directly to the production area, or load-center, and is there stepped down to the desired voltage. Short secondary cables then feed the power to motors, lamps and other factory equipment. On a medium-size factory with a power demand of 3000 kva, using its voltage at 480 volts supplied from two utility 13200-volt lines, it has been estimated that 7,800 lbs. of steel, 11,500 lbs. of copper, and 1,300 lbs. of other material can be saved. Approximately 75% of the material saving is due to the reduction in cable required and by the use of GE interlocked armor cable. This means a saving of $12,000, or 21% over the more complicated systems. The simplicity of this system, with the equipment for adequate interrupting capacity, makes it easy to operate, safe, and voltage regulation is only slightly inferior to the more expensive arrangements.

The GE unit substation used in the load-center distribution system, is a compact unit assembly of a high voltage switchgear section, step-down transformer section, and low-voltage switchgear section. It is shipped in sections, ready to be installed, either indoors or, with a weatherproof housing, outdoors. The primary switchgear sections are of standard vertical lift, and of metal clad construction. Power circuit breakers are easily removed and a full complement of instruments, meters and relays is provided.

H. E. Houghton to be Consultant

Harry E. Houghton has been appointed merchandising consultant to the office of Paul V. McNutt, Federal Security Administrator.

Mr. Houghton's duties will include the development of a national nutrition merchandising plan for the Office of Defense Health and Welfare Service, and the coordination of the nutritional activities of all industries with this plan.

For the past five years Mr. Houghton has been general sales manager of Brown Company, pulp and paper manufacturing concern, and will continue in this capacity. Previously he was identified with the advertising agency business as a vice-president of both Geyer, Cornell & Newell and Sherman K. Ellis Co., Inc.

Salesmen Announce Speaker

The Annual Luncheon of the Salesmen's Association of the Paper Industry, will be held in the grand ballroom of the Waldorf-Astoria Hotel, New York, on Tuesday, February 17.

The featured speaker will be Eugene Peeples Thomas, president of the National Foreign Trade Council, Inc., who will speak on "Economic Accord Among the United Nations." Mr. Thomas is an accomplished speaker with a comprehensive knowledge of world-wide economic conditions. He is a former vice-president of the United States Steel Corporation, the United States Steel Products Company, and chairman of the Exporters advisory committee of the Export-Import Bank of Washington, D. C.

Over 1,100 reservations have been received for the luncheon and a record attendance is expected this year. Early reservations are requested and should be made with E. O. Merchant, secretary, Salesmen's Association of the Paper Industry, 122 East 42nd street, New York.

Michael E. McGarry Resigns

Announcement has been made of the resignation of Michael E. McGarry from W. G. Matthews and associates, distributors of sheet music and binding materials. Before joining the Matthews organization Mr. McGarry spent twenty years in the paper industry, being connected with The American Writing Paper Corporation, The Munising Paper Company, and The Wausau Paper Mills Company in manufacturing and sales capacities. During that period he became well and favorably known to a large number of printing paper distributors and converters throughout the country, because of his broad knowledge of printing and specialty paper requirements.

Although his plans are indefinite, Mr. McGarry contemplates returning to the paper industry where his wide experience can be used to the best advantage. Mr. McGarry at present is at his home, 819 Marvin Parkway, Park Ridge, Ill.

Sherman Adams Heads Searching Party

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., January 26, 1942—Among the first to organize a searching party for the two members of the seven-man crew of the B-18 twin-motored army bomber which crashed near North Woodstock, N. H., recently, was Rep. Sherman Adams of Lincoln, N. H., superintendent of the timber line department of the Parker-Young Company. Mr. Adams called for volunteers among his trained woodsmen and they with other townspeople from North Woodstock started for the scene of the crash. The search ended when the charred bodies of Private Raymond F. Lawrence of Worcester, Mass., and Noah W. Phillips of Pleasant, Ark., were found in the wreckage of the plane.

G. H. Mead on Labor Board Panel

WASHINGTON, D. C., January 26, 1942—The President has appointed George H. Mead, president of the Mead Corporation of Dayton, Ohio, as an alternate employer member of the National War Labor Board to take the place of James W. Hook, president of the Geometric Tool Company of New Haven, Conn., who was unable to serve.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 28, 1942—The Government Printing Office has received the following bids for 100,000 pounds of white sulphite writing paper: Cauthorne Paper Company, 7.25 cents; Whitaker Paper Company, 6.9 cents; Paper Corp. of U. S., 7.52 cents; and Marquette Paper Company, 7 cents.

For 44,400 pounds of pink mimeograph paper; Cauthorne Paper Company, 8.75 and 8.2 cents; Marquette Paper Company, 7.75 cents; and Paper Corp. of U. S., 8.04 cents.

For 1,900 sheets of 20 x 32 pink gummed paper: Whitaker Paper Company, $16.06 per M sheets; R. P. Andrews Paper Company, $19.00; and Paper Corp. of U. S., $22.00.

The Government Printing Office has just announced the following paper awards, bids for which have been received during the past few weeks.

R. P. Andrews Paper Company will furnish 50,000 pounds of 50% rag, 32 x 42 white bond paper at 15.4 cents and Barton, Duer & Koch Paper Company will furnish 50,000 pounds of same at 17 cents. Graham Paper Company will also furnish 50,000 pounds of 50% rag, 32 x 42 white bond paper at 17 cents. Walker Goulard & Plehn Company will furnish the same amount of the same size and kind at 17 cents. Same will also be furnished by the Stanford Paper Company at 18.7 cents, including the same amount.

Kalamazoo Paper Company will furnish 200,000 pounds of 38 x 48 supercalendered paper at 7.3 cents and Eastern Corporation will furnish 34,500 pounds of 21 x 32 white sulphite ledger paper at 8.24 cents. Same firm will also furnish 22,960 pounds of 32 x 42 white sulphite writing paper at 7.27 cents.

Walker Goulard & Plehn Company will furnish 40,000 pounds of 50% rag, white bond paper in 24 inch rolls at 16 cents. Henry Lindenmeyr & Sons will furnish 60,243 pounds of 42 x 65 white sulphite writing paper at 7.75 cents. Resolute Paper Products Corp. will furnish 40,000 pounds of 25% rag, 38 x 48 white bond paper at 15.75 and 16.5 cents.

Resolute Paper Products Corporation will furnish 6,350 pounds of 24 x 38, 25% rag, yellow bond paper at 17.05 cents. Same firm will also furnish 11,100 pounds of 25% rag, 36 x 48 yellow bond paper at 17 cents. The same firm will also furnish 18,600 pounds of 25% rag, 21 x 32 green bond paper at 17.05 cents. R. P. Andrews Paper Company will furnish 20,000 sheets of 22 x 28 buff railroad board at $70.73 per M sheets. Barton, Duer & Koch Paper Company will furnish 4,000 sheets of 24 x 36 Quaker drab cloth lined cover paper at $180.00 per M sheets. Cauthorne Paper Company will furnish 200,000 pounds of telephone book news paper in 38 inch rolls at 5.15 cents.

Walker Goulard Plehn Company, Inc., will furnish 20,400 pounds of 21 x 31 buff wood bristol board at 7.25 cents. Mudge Paper Company will furnish 6,137 pounds of 51 x 33 jute tag board at 11.25 cents and the same firm will also furnish 4,319 pounds of the same at the same price. Whitaker Paper Company will furnish 99,880 pounds of 32 x 50 white sulphite index paper at 7.76 cents and the R. P. Andrews Paper Company will furnish 6,600 pounds of 28 x 34, 50% rag, white bond paper at 18.5 cents.

Wilcox-Walter-Furlong Paper Company will furnish 124,680 pounds of 50% rag, 34½ x 44½ white bond paper at 15.4 cents and the Mathers-Lamm Paper Company will furnish 18,865 pounds of 50% rag, 34 x 50 white lithograph chart paper at 22.5 cents. The same firm will also furnish 21,575 pounds of the same 36 x 54 at 22.5 cents. Frank Parsons Paper Company will furnish 1,142 pounds of M.F. book paper in 28½ inch rolls at 4.664 cents. Whitaker Paper Company will furnish 591,000 pounds of 38 x 48½ white mimeograph at 6.94 cents.

Paper Corporation of the U. S. will furnish 75,000 pounds of 20 x 25 tan bristol board at 10.97 cents and the same corporation will furnish 100,000 pounds of 25 x 38 same at 10.97 cents. Stanford Paper Company will furnish 50,000 pounds of 50% rag, 30 x 48 litho finish map paper at 16.8 cents. Walker Goulard Plehn Company will furnish 100,000 pounds of 50% rag, litho finish map paper at 17 cents and the Cauthorne Paper Company will furnish 51,328 pounds of 39⅜ x 44 yellow sulphite writing paper at 8.25 cents. The same firm will also furnish 42,016 pounds of same size salmon same at 8.25 cents.

Barton, Duer & Koch Paper Company will furnish 10,500 pounds of 26 x 32 offset book paper at 7.65 cents and the Whitaker Paper Company will furnish 575,000 pounds of 38 x 48 offset book paper at 7.65 cents. Knowlton Bros. Inc. will furnish 40,000 pounds of 25% rag, 38 x 48½ mimeograph paper at 10.12 cents. Same firm will also furnish 6,500 pounds of 25% rag, 8 x 10½ same at 10.12 cents.

Cauthorne Paper Company will furnish 66,667 pounds of 25% rag, 38 x 48½ mimeograph paper at 11 cents and same firm will also furnish 33,333 pounds of same 38 x 24½ at 11 cents while Mudge Paper Company will furnish 66,666 pounds of same 38 x 48½ at 11.77 cents. Same firm will also furnish 33,334 pounds of same 38 x 24½ at 11.77 cents. R. P. Andrews Paper Company will furnish 166,667 pounds of same 38 x 48½ at 11 cents and the same firm will also furnish 83,333 pounds same 38 x 24½ at 11 cents.

The Mead Sales Company, Inc., will furnish 93,500 pounds of 32 x 42 white sulphite writing paper at 8.583 cents. Walker Goulard Plehn Company will furnish 182,510 pounds of 50% rag, 32 x 48 white index paper at 17 cents. Paper Corporation of U. S. will furnish 800,000 pounds of 8 x 10½ ground wood mimeograph paper, half at 7.75 cents and the other half at 8.15 cents. Barton, Duer & Koch Paper Company will furnish 400,000 pounds at 7.95 cents.

Stanford Paper Company will furnish 41,875 sheets of 22⅛ x 34½ white cloth lined cover paper at $109.51 per M sheets. Mudge Paper Company will furnish same quantity of same at same price as also both Barton, Duer & Koch Paper Company and Whitaker Paper, also to furnish same quantity of same at same price.

W. H. Smith Paper Co. Gets Option

ALBANY, N. Y., January 28, 1942—The W. H. Smith Paper Company has acquired an option to purchase the property on Broadway owned by St. Paul's Episcopal Church. The option extends for two years and offices will be moved from Hudson Avenue.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending January 28, 1942

	High	Low	Last
A. P. W.	1⅝	1½	1½
Armstrong Cork Co.	26½	24¾	25
Celotex Corp.	8	7⅞	8
Celotex Corp., pf.	....	....	....
Certain-Teed Products Corp.	2⅜	2	2⅛
Certain-Teed Products Corp., pf.	29	26¼	28⅜
Champion Paper & Fibre Co.	....	....	....
Champion Paper & Fibre Co., pf.	98½	98	98½
Congoleum-Nairn Co.	16½	15⅛	16¼
Container Corp. of America	13	12⅝	12¾
Continental-Diamond Fibre Co.	7⅜	7¼	7⅞
Crown-Zellerbach Co.	11½	11¼	11¼
Crown-Zellerbach Co., pf.	87	86	86½
Flintkote Co.	9⅞	9½	9⅞
Robert Gair	2	1⅞	2
Robert Gair, pf.	10¼	10	10⅛
International Paper Co.	15	14⅛	14¾
International Paper Co., pf.	59	58½	58¾
Johns-Manville Corp.	56¼	55½	56
Johns-Manville Corp., pf.	123⅜	122½	123⅜
Kimberly Clark Corp.	28	27½	28
MacAndrews & Forbes	22	22	22
MacAndrews & Forbes, pf.	131	131	131
Masonite Corp.	25½	25¼	25½
Mead Corp.	6½	6⅛	6⅜
Mead Corp., pf.	70	69¾	70
Paraffine Companies, Inc.	24	23½	24
Paraffine Companies, Inc., pf.	100	100	100
Rayonier, Inc.	10¾	10⅜	10⅜
Rayonier, Inc., pf.	25⅛	25	25
Ruberoid Co.	....	....	....
Scott Paper Co.	36½	35	35
Scott Paper Co., pf.	107	107	107
Sutherland Paper Co.	18⅛	17⅞	18
Union Bag & Paper Corp.	9⅛	9	9
United Paperboard Co.	3½	3⅜	3⅜
U. S. Gypsum Co.	47	43¾	46⅜
U. S. Gypsum Co., pf.	170	170	170
West Virginia Pulp & Paper Co.	17⅛	17¼	17¼

New York Curb Exchange

High, Low and Last for Week Ending January 28, 1942

	High	Low	Last
American Box Board Co.	4	4	4
Brown Co., pf.	....	....	....
Great Northern Paper Co.	35¾	34	35¾
Hummel-Ross Fibre Corp.	4⅝	4⅝	4⅝
National Container Corp.	....	....	....
St. Regis Paper Co.	2½	2¼	2½
St. Regis Paper Co., pf.	118	117	118
Taggart Corp.	3	3	3

Brompton to Get Lake Sulphite Co.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., January 26, 1942—Shareholders of the Lake Sulphite Pulp Company at a special meeting Thursday were informed by N. C. Polson, chairman of the shareholders' protective committee, that no satisfactory plan could be presented at the meeting. Furthermore, Mr. Polson stated that the committee desired to avoid any chance of the offer by Brompton Pulp and Paper Company, made to creditors, being jeopardized, and therefore would not request a further delay.

Harrison C. Hayes, representing the receiver, and chairman of the meeting, then announced that the court had instructed the receiver to report any alternative plan that might be advanced by shareholders to the court the next day, January 23. The court order, he said, had also stated that unless a more acceptable proposal was forthcoming, an order to sanction the present offer would be made.

Speaking for the shareholders, Mr. Polson explained that shareholders had invested $3,300,000 to the treasury of the company and that the committee objected to the Brompton deal "because it gives us nothing." He intimated that had shareholders been called in before "we might have been able to assist in bringing in financial aid, which was not brought in."

Mr. Polson said that on Tuesday last a deal was under negotiation "in a most serious way" and continued until yesterday (Wednesday). He stated that plenty of "junior" money and, he believed, ample "senior" money was made available, "on condition that we provided sponsorship and management" satisfactory to the negotiating interests. "We were not in a way to provide that management," and for that reason no deal could be presented at this meeting.

Mr. Polson said that the committee objected to the present deal, and still urged that the receiver should in some manner provide some consideration for shareholders.

After calling the meeting to order, the chairman stated that the meeting had been called under court order and that notices had been sent to shareholders. He referred to various negotiations, which, he said, had failed to mature.

Mr. Hayes advised the meeting that the Brompton purchase offer allowed for a return of only 25% on secured creditors' claims and 10% on unsecured creditors' claims. He said that the receiver had undertaken obligations, and a loss on these might be involved, should the Brompton offer not go through.

Subsequently the court sanctioned the sale of the properties through the receiver.

Brompton, it is understood, will go ahead immediately with plans for completing the property at Red Rock, Ont., on the north shore of Lake Superior, to bring into production some 60,000 tons of sulphite pulp per annum. "Financial Counsel" is authority for the statement that along with the property will go a guarantee by the Ontario government to make available pulpwood in the district to an extent of some 7,500,000 cords.

Brown Co. to Repay RFC

H. P. Carruth, vice-president in charge of operations of the Brown Company, announces that the directors have voted to repay $1,660,056 on the principal of the $4,500,000 loan which the pulp and paper company received from the R. F. C. on November 29, 1941.

"When the loan was arranged, it appeared that $4,500,000 would be required to put the reorganized company in a satisfactory financial condition," Mr. Carruth said. "However, the company's planned program of increased efficiency and economy of operation is now bearing fruit. The saving realized under this program plus a period of capacity productions have improved the company's financial picture and made possible the sizeable repayment to the R. F. C."

The $1,660,056 payment will be applied to future sinking fund requirements. Mr. Carruth stated that the savings to Brown Company in interest charges will amount to $66,000 per year.

Kimberly-Clark Earns $4.81

The Kimberly-Clark Corporation has issued a revised earnings statement for the twelve months ended September 30 as a result of a change to the "last-in first-out" method of inventory pricing.

The adjusted net profit for the twelve months

ended with September amounts to $2,436,192, or $3.77 a common share, against $2,555,074, or $4.01 a share, previously announced. The net profit for the twelve months ended on September 30, 1940, was $2,947,031, or $4.81 a share, on the common.

C. L. Buchanan Elected

C. L. Buchanan, Chicago, was elected a vice-president of the Whitaker Paper Company, on January 17, at the board of directors meeting which immediately followed the annual meeting of stockholders. He replaces the late J. T. Hillyer.

All other officers and Directors were reelected, H. F. Hewitt, Secretary, announced.

H. D. Whitaker, president, announced to stockholders that the company's annual statement of financial condition could not be completed in time for the meeting. This will be forthcoming soon, he said.

Directors ordered a regular quarterly dividend of $1.75 on the preferred stock, and a $1 dividend on the common, both payable April 1 to holder of record March 16.

Watervliet Reelects Officers

KALAMAZOO, Mich., January 26, 1942—All officers and directors of the Watervliet Paper Company, Watervliet, Mich., were re-elected at annual stockholders' and directors' meetings in the Park-American hotel.

Officers who will continue for another year are: George K. Ferguson, president and general manager; Charles B. Hays, vice president; and L. B. Anderson, secretary; James B. Balch, treasurer.

Directors, in addition to the four officers, are Arno R. Schorer, Fred Scheid, Rockwell LeRoy, Wilbur C. Hunting, Chester Monroe. Messrs. Balch, Hays, and Scheid were named to continue as members of the executive committee, with Mr. Balch as chairman.

Rolland Votes Dividend

TORONTO, Ont., January 26, 1942—Rolland Paper Company announces that the 15 cents a share dividend on its common stock, payable February 13, should in reality be considered a year-end bonus to bring total 1941 payments to 75 cents a share, the same amount as paid in 1940. The dividend of the same amount which is payable February 14 is the first quarterly payment for 1942.

The company has been paying at an annual rate of 60 cents a share for the past three years, plus 15 cents a share for 1940 and 1941.

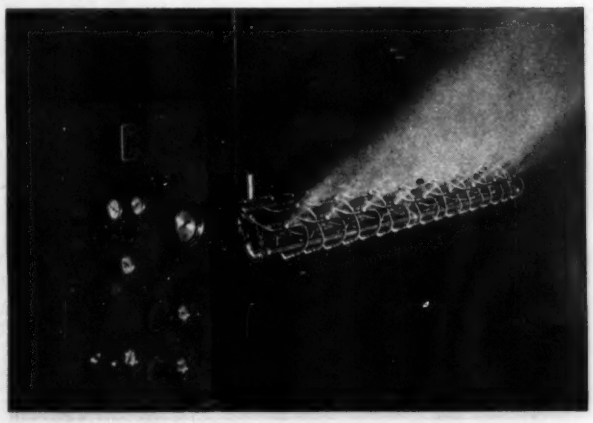
Container Corp. Votes Dividend

The Container Corporation of America voted a dividend of 25 cents a share on the common stock, payable on March 3 to stockholders of record February 5. Previous payment was 75 cents made November 20, 1941.

National Container Votes Dividend

The National Container Corporation has declared a dividend of 25 cents a share on the common stock, payable on March 16 to stockholders of record February 20. Previous payment was 50 cents made December 15, 1941.

SPRACO
Battery Spray MOISTENING EQUIPMENT



Spraco Battery Spray Moistening Equipment will give you an accurately controlled bank of finely-atomized mist of uniform density. The amount of moisture delivered can be varied over the working range without affecting the uniformity of distribution.

Built of an assembly of adjustably-mounted, compressed-air-operated, atomizing spray heads, the equipment can be designed to fit any given width of paper. Different sizes of spray heads provide a wide range of capacities.

For putting moisture into paper or applying chemical compounds in processing, you will find Spraco Battery Spray Moistening Equipment highly satisfactory.

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118 Central St., Somerville, Mass.

CONSTRUCTION NEWS

Stockton, Calif.—The Fibreboard Products, Inc., Russ Building, San Francisco, Calif., manufacturer of fibre board and paper board specialties, templet board, etc., has approved plans for new addition to branch mill on Church street, Stockton, consisting of a one-story structure, reported to cost in excess of $85,000, with machinery. General erection contract has been awarded to Engineers, Ltd., 225 Bush street, San Francisco, and work will begin at once.

St. Paul, Minn.—The Waldorf Paper Products Company, Box Division, 2236 Myrtle avenue, manufacturer of corrugated boxes and containers, has completed plans for alterations and improvements in plant. General contract has been awarded to William M. Murphy & Son, New York Building, St. Paul, and work will be placed under way at once. No estimate of cost announced.

Cleveland, Ohio—Fire recently damaged a portion of plant of John A. Church Box Company, 3939 Valley road, manufacturer of corrugated boxes and containers. No estimate of loss has been announced. The damage will be replaced.

Los Angeles, Calif.—Fir-Tex of Southern California, Inc., 812 East 59th street, insulating board products, has taken out a permit for new addition to storage and distributing plant, recently referred to in these columns, and work on superstructure is being placed under way. It will be one-story, about 90 x 100 feet, reported to cost close to $25,000, including equipment. The Lynch Construction Company, 730 East Gage avenue, Los Angeles, has the general contract. Edward C. and Ellis W. Taylor, 803 West Third street, Los Angeles, are architects and engineers. Company is local representative for the Fir-Tex Insulating Board Company, St. Helens, Ore.

Marcellus Falls, N. Y.—The Marcellus Falls Paper Mills, Inc., has been organized with capital of $100,000, and plans early operation of a mill in this vicinity for the manufacture of a line of paper goods. New company is represented by Legal Albany Service, 298 Broadway, New York. Names of principals are temporarily withheld.

Tacoma, Wash.—The new boiler unit to be installed in power house at sulphite pulp mill of the St. Regis Paper Company, Kraft Pulp Division, on City Waterway, referred to in these columns recently, will be of the latest type designed by Babcock & Wilcox Company, New York, N. Y. It will have a rating of 3000-hp., and will be the largest unit of integral furnace type produced by the company. The new boiler is scheduled for delivery in April, and it is expected to complete work on the power house expansion about 90 days later. Entire project is estimated to cost about $100,000. Contract for work, including boiler installation, has been awarded to C. C. Moore & Company, Smith Tower Building, Seattle, Wash. Marshall & Barr, Exchange Building, Seattle, are consulting engineers.

Minneapolis, Minn.—The B. F. Nelson Manufacturing Company, 401 N. E. Main street, manufacturer of roofing papers, felts, etc., has plans for addition to power house at mill at 400-406 N. E. Marshall street, with installation to include a new boiler unit and auxiliary equipment. Cost reported over $35,000, with equipment. An award for foundations has been made to James C. Hazlett, Jr., 5004 Oliver avenue South, and contract for superstructure is scheduled to be made soon.

Brokaw, Wis.—The Wausau Paper Mills Company, manufacturer of bond, ledger and other paper stocks, is completing the rebuilding and repairing of mill damaged by flood last fall, and will have structure ready for regular production service in near future. The Waupaca Brick Company, Waupaca, Wis., has the contract for brick work, while roofing will be carried out by the E. D. Chase Company, Oshkosh, Wis. General contract previously was let to C. R. Meyer & Sons Company, 50 State street, Oshkosh, as has been noted in these columns.

Toronto, Ont.—The Dominion Envelope Company, Ltd., 130 Dundas street, manufacturer of commercial envelopes and other paper stocks, has approved plans for new building on Ontario place, in vicinity of plant, to be used primarily for storage and distribution. It will be one-story, about 70 x 140 feet, estimated to cost over $60,000, with equipment. General contract for erection has been awarded to the Toms Contracting Company, 10 Lake Crescent, Mimico, Ont., and work will be placed under way at once.

New Companies

Niles, Mich.—The Airways Paper Company, Inc., has been chartered to manufacture and deal in paper products of various kinds. Frank G. French, Niles, is principal incorporator and head.

New York, N. Y.—The Amherst Specialty Paper Company, Inc., has been organized with capital of 500 shares of stock, no par value, to deal in paper products of various kinds. New company is represented by Levy & Singer, 270 Broadway, New York, attorneys.

New York, N. Y.—The Everett Transparent Container Company, Inc., has been incorporated with capital of 20 shares of stock, no par value, to manufacture and deal in special paper boxes and containers, mailing devices, etc. New company is represented by Maxwell G. Cutler, 11 West Forty-second street, New York, attorney.

New York, N. Y.—Mitraco, Inc., has been chartered with capital of 100 shares of stock, no par value, to manufacture and deal in wood fibre products of various kinds. New company is represented by Arthur I. Meyer, 276 Fifth avenue, New York, attorney.

Providence, R. I.—The United Paper Stock Company, Inc., has been organized with capital of 100 shares of stock, no par value, to deal in paper goods of various kinds. Walter I. Sundlun, Providence, is principal incorporator and representative.

New York, N. Y.—The Minidex Corporation of America, Inc., has been chartered with capital of 5000 shares of preferred stock, and 100 shares of common stock, both no par value, to manufacture commercial paper products for indexing, filing and kindred service. New company is represented by Everett H. Hunt, 11 North Pearl street, Albany, N. Y., attorney.

Meet on Paper Specifications

WASHINGTON, D. C., January 28, 1942—The Paper Specifications Committee of the Joint Congressional Committee on Printing had an initial meeting last week in connection with specifications for paper for use of the Government Printing Office for the period beginning April 1 next. At the last opening awards were made for paper through March 31.

One of the questions on which the specifications committee is experiencing the most trouble is chlorine and the committee has asked OPM paper officials for a conference. The specifications committee will not complete its work for some little time. If new awards are to become effective on April 1 the Joint Congressional Committee on Printing will probably have to open bids the latter part of February or early in March. It has not yet been decided whether the bid opening will be for three or six months.

Merrimac and Munroe Firms Merge

A deed recently placed on record at the registry of deeds office here points to a combining of the Munroe Paper Corporation, Inc., and the Merrimac Paper Company, Inc., as of December 31 last. Both plants manufacture paper and are located in close proximity of each other on South Canal street.

In adhering to state legal regulations, a certificate attached to the deed says that "Donald J. Hurley, clerk of the Kraft Liquidation Corporation (which has this day changed its name from the Merrimac Paper Company, Inc.) certifies that at a special meeting of stockholders December 31, 1941, it was unanimously voted that the corporation convey to the Munroe Paper Corporation, Inc. (which is about to change its name to the Merrimac Paper Company, Inc.) its real estate and appurtenant mill powers and water privileges, together with all tools, machinery and manufacturing equipment owned by the corporation and affixed to the premises."

Land and buildings the involved in the transfer from the "Kraft Liquidation Corp." (which has changed its name from the Merrimac Paper Company, Inc. (which has changed its name from the Munroe Paper Corporation).

Walter E. Shuttleworth Dead

Walter E. Shuttleworth, founder and president of W. E. Shuttleworth & Co., manufacturers of paper bags at 6 Varick street, New York, and vice-president of the Moser Paper Bag Company, of Cleveland, died January 17 in Miami Beach, Fla. He was sixty-four years old and lived at 9747 Shore road, Brooklyn.

Mr. Shuttleworth was born in Norton Hill, Greene County, N. Y., and entered the paper-bag business at the age of fourteen. He founded the company thirty years ago and was active in business until a few months ago, when illness forced him to go to Miami. He was a veteran of the Spanish-American War, having served with the 22d New York Infantry Regiment.

Surviving are his widow, two sons, a daughter, three sisters and two brothers.

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of Your Paper or Board Machine

Unrealized Abilities of your paper or board machine may be grasped by treating your stock with a Sutherland Single Rotating Disc Refiner. Sutherland Refiner Corporation, Trenton, New Jersey.

SUTHERLAND REFINERS

E. L. Kurth on Union Bag Directorate

Ernest L. Kurth, president of Southland Paper Mills, Inc., of Lufkin, Texas, has been elected a director of Union Bag and Paper Corporation. Mr.

E. L. KURTH

Kurth, a prominent Texas industrialist, is a director of the Federal Reserve Bank of Dallas and of several Texas banks. He has long been associated with forestry projects in both the lumbering and paper fields.

Bryant Co. Elects Officers

The board of directors of the Bryant Paper Company, Kalamazoo, Mich., at a special meeting held January 21, announced a new administrative group succeeding the late William J. Lawrence:

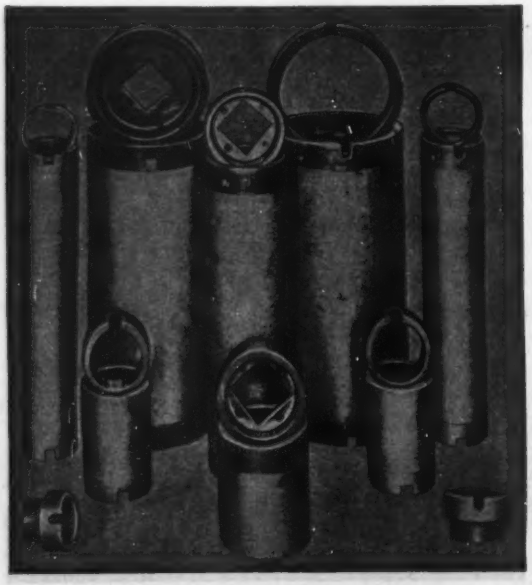
Ralph A. Hayward was named chairman of the board, Dr. S. Rudolph Light, president, Allan B. Milham, executive vice-president and general manager, E. H. Larkin, vice-president in charge of Western sales and Peter H. Gideon, secretary-treasurer.

Mr. Hayward is widely known throughout the paper industry and is active president of the Kalamazoo Vegetable Parchment Company.

Dr. Light, who was advanced from the vice-presidency, has long been a civic and business leader in Kalamazoo. He is a former president of the Kalamazoo Chamber of Commerce, a former Mayor and City Commissioner, has been an executive of the Upjohn Company and is a member of the board of the Federal Home Loan Bank, of Indianapolis.

Mr. Milham, the new executive head of the company, had previously been secretary of the company and superintendent of the Imperial Coating Division. He is a son of W. B. Milham, former president and chairman of the board. Mr. Milham joined the Bryant organization in 1912 as a bookkeeper. After an interval for college and naval air service in World War I, he became purchasing agent and later on sales manager.

At the same time it was announced that L. W. Sutherland, president of the Sutherland Paper Company, and William J. Lawrence, Jr., son of the late president, had been added to the board of directors.



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CORINTH, N. Y.

Good Quarter Expected

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., January 26, 1942 — Following the annual inventory period, the local paper demand bounded forward again last week and business seems destined for a good first quarter if adequate stocks can be secured. As it is, the volume recovered after the holiday season much more rapidly than is usual. Volume is certain to be high for some time with more and more defense industries being located in the state.

Demand for fine paper from the defense industries is particularly large at the present time and not all of it is on government contract. A considerable volume is being bought by private plants which have subcontracts for defense work. Prices naturally are firm to strong, but there is no present indication of any radical increases.

Every effort is being made here to conserve paper. Some of the largest retail groceries in the city have limited the wrapping and sacking of vegetables and are urging customers to bring their own baskets or shopping bags. For instance, if a customer wants three or four varieties of vegetables, they are put in one bag instead of bagging them separately. Demand for waxed paper continued good last week with baking companies and other users taking large quantities. Many former users of cellophane have restricted the wrapping of their products in this material as a defense measure.

Judging from all reports, demand for building and roofing paper will be good the first half of the year, unless something of a government nature restricts new construction. It is believed here, generally, that new construction will be permitted particularly in defense areas and this certainly is one.

Newsprint demand was increasing last week, lineage in both metropolitan and small papers increasing. Prices were firm to strong.

Paper stock was in a somewhat flux condition. Some irregularity was reported, but most of the Indiana trade continues to abide by the OPA maximum prices. Rags were in fair demand with prices firm and little indication of change.

Planned Cleaning

The Magnus Chemical Co., Inc., manufacturers of hand cleaners, industrial cleaning materials and emulsifying agents, has just issued a new 24-page technical bulletin entitled 'The Care and Cleaning of Hands and Arms in the Industrial Plant."

The bulletin has been written and designed for use by safety engineers, industrial physicians, industrial insurance men, plant superintendents and every plant man who is interested in or concerned with the control of industrial dermotosis.

A few of the important phases in the care and cleaning of hands and arms discussed in this bulletin are: What a hand cleaner should do—and what it should not do; safe detergents and scouring agents; germicides and medicants; lime scums and rinsing; cleaning routines, etc.

This technical bulletin should be of great assistance to industrial executives in maintaining a healthy condition of employee's hands and arms through the use of planned cleaning routines and safe hand cleaning compounds.

Copies of Magnus Technical Bulletin No. 51 can be obtained by writing to the Magnus Chemical Company, Inc., Garwood, N. J.

Not one but SIX

Warren Digester Liquor Circulating Pumps

are operating successfully in a prominent Eastern Mill. This is only *one* of *several* satisfactory Warren installations at other nationally known Pulp Mills in this admittedly difficult service. High temperatures, high pressures, and highly corrosive acid are *all* taken in the usual business-like stride of Warren Pumps.

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WARREN PUMPS

Warren Steam Pump Company, Inc., Warren, Massachusetts

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 114 January 29, 1942 No. 5

COMING EVENTS IN PAPER INDUSTRY

AMERICAN PAPER AND PULP ASSOCIATION. Sixty-fifth Annual Convention and meeting, Waldorf-Astoria Hotel, New York, February 16-20.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Convention, Commodore Hotel, New York, February 16-19.

SALESMEN'S ASSOCIATION OF THE PAPER INDUSTRY, Annual Meeting and Luncheon, Waldorf-Astoria Hotel, New York, Tuesday, February 17.

NATIONAL PAPER TRADE ASSOCIATION OF THE UNITED STATES, Convention, Waldorf-Astoria Hotel, New York, February 16-19.

THE NEW YORK ASSOCIATION OF DEALERS IN PAPER MILLS' SUPPLIES, Annual Banquet, Commodore Hotel, New York, Tuesday, February 17.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

PRICES AND LABOR POLICIES

Many dislocations and inconvenient changes in the normal conduct of business and in peace-time living are inevitable during a large-scale expansion of the many supplies required in a great war program. The magnitude of the war plan prepared for the most active participation of this country in the world conflict, is on so vast a scale that there is evidence that even the planners and administrators of it are somewhat appalled at the effort, sacrifice and cost which it will entail. But circumstances have created an emergency, a crisis, that must be met. The independence of this and other nations must be preserved. That is what counts most and certainly it is worth fighting for. No dissenting opinion can be validly voiced against the principle the United States upholds by force of arms, but opinions on the methods employed for the successful accomplishment of many phases of it, will, as is always the case in a democratic form of government differ, and often to a considerable extent.

The price inflation bill is one prominent example of this range of opinion. From the beginning of the discussion to determine the most effective measures to prevent excessive inflation, much specious opinion and various proposals have prevented making a really effective price-control law. The primary reason for this dilatory conduct is lack of proper unity and this or that faction has sought to gain some special privilege. Thus, while a ceiling was placed on many essentials, uncontrolled wages have continued to exert great pressure to raise prices, and uncontrolled agricultural prices have also exerted pressure of a definite inflational nature. It seems plain enough from the affect which these two uncontrolled forces have already exerted to advance the price level, that a more complete method is required. The advice long given but as yet unfollowed, was to control and fix the prices of everything that is an important factor in the price situation. Until this is done, and it must be done eventually if the price situation is to be adequately controlled and undesirable inflation prevented, the uncontrolled factors will offset to a considerable extent the controlling measures in effect.

But to attain that unity which is essential for a nation at war to achieve success more must be accomplished. Agreements on agricultural prices and wages have yet to be satisfactorily determined. In commenting on rising food prices and the new price bill, Price Administrator Henderson said, in addressing the National Defense Forum of the General Federation of Women's Clubs, held at Washington on January 24 that, "If we have no more in the way of price control than the bill that came out of Congress this week, no one will dare say we will not have inflation. This is especially true about the cost of living, because the bill could not stop a rise in food and fiber prices. . . . We are specifically hindered from controlling prices by legislation. We're forbidden now to do anything. Everything in the bill intended to help in regulating prices was whittled down so that many devices can no longer be used."

In commenting on agricultural prices in the price bill, the *Washington Review* says in part: "That such a novel statistical product should appear was not unnatural. From the beginning the bill has been surrounded with an atmosphere of fantastic figures. The abuse and misuse of statistics and indices computed from them have reached such a point that it may soon be a fair question if we should not be better off without any statistics at all. That question may become acute when the barrage of irresponsible statistics about new taxes, already being tried out experimentally, reaches its full volume, in the next month or six weeks."

The vigorous demands of labor may be taken as a conspicuous instance of how effective the factor of wages can raise prices and contribute partly to increase inflation. Although higher wages have been asked and have been granted in the paper industry, and frequently voluntarily given, the wage increase to railroad employees is too great to be absorbed by the carriers and railroad rates go up 10%. Objection to fixing wages has been voiced on the ground that wages are not a commodity but that is beside the point. Wages are not properly classified as a commodity but wages are a factor in the price situation and should be considered as such.

The labor policies of the administration have been unfortunate in creating a great deal of dissension and it is to be hoped that the war labor policies in the future may be guided to function more smoothly and

more equitably than in the past. In commenting on this subject the *Washington Review* of January 19, published by the Chamber of Commerce of the United States says in part: "The new war labor board, created by executive order, has begun its first conferences from which probably soon will come information with regard to procedure that will be followed and standards to be set up. The board has on it twelve members, four each representing the public, industry and labor. Albert W. Hawkes, president of the National Chamber, is one of the four industry members. This new board possesses much more authority than the former National Defense Mediation Board. The authority of the new board is based on the proposition that during the war there are to be no strikes impairing war production, and the corollary that all disputes are to be settled through peaceful means. This proposition of no impairment of war production has the overwhelming support of the people of the United States. . . . The additional authority of the new board under the executive order which created it appears most prominently in the function given the board to hear and make a final determination of any dispute not settled by direct negotiation, conciliation, mediation or voluntary arbitration. The jurisdiction of the board extends to any dispute which might interrupt work contributing to the successful prosecution of the war. Moreover, its jurisdiction extends to any dispute which is not concluded when other procedures that are provided for adjustment or settlement have been exhausted."

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1942		Corresponding Weeks, 1941	
December 13, 1941.....	106.4	December 14, 1940.....	88.3
December 20, 1941.....	107.0	December 21, 1940.....	88.5
December 27, 1941..... (Holiday Week).....	80.0	December 28, 1940.....	61.4
January 3, 1942.....	102.8	January 4, 1941.....	80.8
January 10, 1942.....	103.2	January 11, 1941.....	87.1
January 17, 1942 (Prelim.)	*103.9*	January 18, 1941.....	86.3

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.6	89.7	92.2	96.0	98.7	99.3	94.2

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	101.0	99.6	105.1	106.0	*100.7*	*97.3*

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941	1942
Year Average	69.9	80.4	79.8	71.5	83.4	85.6	*97.3*	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	84	88	86	94	94	99	98	93	88

Week ending Dec. 13, 1941—101
Week ending Dec. 20, 1941—101
Week ending Dec. 27, 1941— 76
Week ending Jan. 3, 1942— 86
Week ending Jan. 10, 1942—101
Week ending Jan. 17, 1942—*102*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Paper Testing Committee Report—1941*

By B. W. Scribner[1], Chairman

Physical Methods

The following revised or corrected physical methods were issued in the standard loose-leaf form: sampling, folding endurance, conditioning, tensile breaking strength, basis weight, ink absorption of blotting paper, dry-indicator method for water resistance, and saturating properties of roofing felt.

Relative to the method for conditioning paper for testing, this is now accompanied by a psychrometric chart for conversion of wet- and dry-bulb readings to relative humidity, prepared by F. T. Carson. The necessity for this was made apparent by a committee investigation. The chairman submitted given psychrometic data to the members with the request that they use their usual method for converting the data to relative humidity and that the method used be described. It was found that the 15 members who responded used 7 different kinds of tables or charts, and that the converted values were too variable to be consistent with the TAPPI allowable departure of $\pm 2\%$ from the standard humidity.

New methods issued in standard loose-leaf form are moisture expansivity; water vapor permeability; and rigidity, stiffness and softness.

A proposed method for grease resistance in which turpentine is used as the testing medium was completed by a subcommittee of which S. C. Fairbanks is the chairman. Past investigative work on the subject by a TAPPI subcommittee, and the results of study of it sponsored by the Glassine and Greaseproof Manufacturers Association, were considered in the formulation of the method. It was approved by the Paper Testing Committee for adoption. A method for testing the adhesiveness of gummed paper sealing tape was also approved by the committee for adoption. The McLaurin testing machine, as modified by G. H. Harnden, is used for the test. The proposed testing procedure was developed at the National Bureau of Standards with the assistance of the Technical Committee of the Gummed Industries Association. Relative to a measurement for writing quality of paper, P. W. Codwise has submitted a "surface wettability" test which depends on the angle of contact method. He was assisted in this by G. H. Lafontaine who further investigated this method of testing and publishing his findings in the August 7, 1941, issue of PAPER TRADE JOURNAL.

Development work in progress on physical methods comprises wet tensile strength and paraffin absorptivity.

Chemical Methods

The following revised or corrected chemical methods were issued in standard loose-leaf form: ash, moisture, alkali staining property, sulphur, amount of mineral coating, casein, nitrogen, starch, acidity or alkalinity, silver tarnishing, and paraffin. A new method issued is for determination of pentosans.

The committee has given considerable further consideration to cold extraction versus hot extraction in determination of pH. As the members remain divided on the question, the chairman prepared a further proposed revision which includes both kinds of extraction with explanation of the purpose of each. This is under consideration by the committee members.

Other Methods

Two important new methods were adopted. One is bacteriological examination of paper and paperboard which was developed by the Bacterial Control Methods Committee under the chairmanship of Allen Abrams. This was issued in standard loose-leaf form. The other is the heat test for stability of paper based on a procedure developed at the National Bureau of Standards. This has not yet been printed in standard loose-leaf form but it was published in the December 18, 1941, issue of PAPER TRADE JOURNAL.

The coordination of TAPPI and A.S.T.M. paper testing methods continues to function satisfactorily. Several of the revisions mentioned were made in cooperation with the A.S.T.M. paper committee.

Helen Kiely Speaks on War and Paper

SPRINGFIELD, Mass., January 19, 1942 — Miss Helen U. Kiely of Northampton, technical director and chief chemist of the American Writing Paper Company of Holyoke, was guest speaker at the January meeting of the Catholic Club of Agawam, at the Capt. Charles Leonard House, Agawam Center. Miss Kiely, one of the leading paper chemists and recognized as a leading authority in that field, gained prominence last year when she was included in the list of 100 leading career women in the United States. She spoke on the subject, "How the war and defense needs will affect paper usage."

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* To be presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-19, 1942.

[1] Member TAPPI; National Bureau of Standards, Washington, D. C.

The Influence of Certain Variables in Forming Brightness Handsheets*

By Charles M. Koon[1] and Donald D. Niemeyer[2]

Abstract

An empirical study has been made to determine the influence of certain variables in forming brightness handsheets. The data presented demonstrate the need for exact specification in any method employed, whether for routine mill application or for referee testing. Although certain specifications of the present Institute method are necessarily arbitrary, the standardization of procedure in detail is essential to the attainment of reproducible results within a given laboratory and among various laboratories.

Although the brightness of pulp is one of its important properties, and although the accurate measurement of this property is particularly essential in view of recent directives which specify brightness ceilings, the literature contains few references which relate specifically to the determination of pulp brightness. The principal contributors are Foote *(1)* and Day *(2)* whose excellent work has established the scientific and technical bases for the determination. In a study of the scattering and absorption coefficients of dyed and undyed handsheets, Foote had occasion to observe the effects of certain mechanical sheet-making variables. To these effects he applied methods of interpretation involving the Kubelka-Munk formula *(3)*, which had been applied by others to paper with considerable success. Day mentioned some of the reasons why the surface of a pulp lap does not provide an adequate basis for brightness measurement, with particular reference to the effect of uneven forming pressure, and concluded that the brightness of pulp must be defined as the brightness of a handsheet made therefrom. Day's observations on a few of the more important handsheet variables are summarized as follows: "The sheet should be heavy, of uniform formation, distilled water should be used, pressing should be light, and the sheet should be completely air dried at room temperature with the surface protected." It is interesting to note Day's finding that incomplete drying of the handsheet is associated with higher brightness readings.

The present study was undertaken for the purpose of improving the existing Institute method, particularly with regard to those factors which would be important in the application of the method to pulps of varying history and by laboratories widely separated from each other. It must be emphasized, however, that any such method is necessarily arbitrary in many respects, and that scientific evidence cannot always be cited to justify a given numerical specification—such as, for example, the amount of preliminary disintegration which the specimen is to receive. The only background for such a specification is a general knowledge of pulp behavior and the realization that for certain pulps the scattering coefficient of the handsheet depends critically upon the amount of stirring which the specimen has received. For obvious reasons there can be only one ultimate standard to which disputes over pulp brightness may be referred.

For convenience in the interpretation of the tables, the data have been expressed, whenever possible, in terms of the deviations of the results from those obtained by the revised Institute method [*see* also TAPPI suggested method T 217 sm *(5)*], as a result of specific departures from that method in the experiments represented by the tables.

Experimental

Effects of Water Used in Forming Brightness Sheets

Four samples of water were obtained from mills in the vicinity. None of these actually represented water used in the evaluation of pulp, but the nature of the source was such that it might have been considered for control tests. These samples were evaluated for color by TAPPI Standard T 620 m. Distilled water was used for preparing the platinum-cobalt standards. In order to increase the sensitivity of the test, 100-cc. Nessler tubes were used in place of the 50-cc. tubes specified in the method. The same samples and a sample of redistilled water prepared at the Institute were employed also in the preparation of brightness handsheets by the Institute method. The data are presented in Table I.

TABLE I.—BRIGHTNESS OF HANDSHEETS vs. WATER COLOR

Reference Brightness 89.0 points

Water Color	Deviation from Reference Brightness, points
*	+0.6
5	—3.7
6	—2.5
7	—1.7
9	—2.9

* Distilled water redistilled in glassware.

None of the water samples, except the distilled and redistilled waters, appeared to be suitable for the preparation of brightness handsheets for accurate evaluation. The mill samples were shown also to be inferior by the TAPPI color test, but the correlation between the two sets of data was poor. The fact that redistilled water gave a slightly higher brightness result than distilled water may indicate that even the latter is not absolutely ideal, but additional tests would be required to confirm this.

In order to provide an independent source of distilled water for brightness sheets, a new still was installed at the Institute. In Table II the results of brightness tests employing the new supply are compared with those using the regular supply. The same series of pulp samples, which represented freshly bleached sulphite, was tested in each case. The

* To be presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-19, 1942.

[1] Member TAPPI, Research Associate, The Institute of Paper Chemistry, Appleton, Wis.

[2] Research Assistant, The Institute of Paper Chemistry, Appleton, Wis.

agreement in these brightness values would be satisfactory for any but the most exacting research requirements.

TABLE II.—AGREEMENT OF BRIGHTNESS VALUES REPRESENTING TWO ALTERNATIVE SOURCES OF DISTILLED WATER

Reference Brightness Range 70.5-76.0 points

Pulp Sample	Deviation from Reference Brightness, points
A	+0.1
B	—0.1
C	—0.2
D	—0.2
E	+0.2

Some data obtained during a research project had indicated that the washing of a pulp specimen when formed into a brightness sheet on the British sheet mold may be significant, particularly in view of the high dilution which this method involves. Accordingly, three unbleached sulphite pulps, representing typical commercial operation and obtained in wet lap form, were evaluated by the Institute method before and after very thorough washing with distilled water. Care was taken to avoid loss of fines in the washing operation. The results are given in Table III.

TABLE III.—EFFECT OF WASHING UNBLEACHED SULPHITE PULP

Reference Brightness, points	Deviation as a Result of Washing, points
50.8	0.0
53.0	—0.2
64.7	—1.1

Since thorough washing failed to improve the brightness of any of the three pulps, it would appear that normal commercial washing plus the rinsing action of the dilution water employed in the sheet-forming method is sufficient to remove all easily soluble light-absorbing compounds. The decrease in brightness of two of the pulps might have been due to effects of the oxygen dissolved in the distilled water. It is well known that unbleached sulphite pulps are darkened by mild oxidation.

Effects of Sheetmaking Equipment

Eighteen pulps, covering a wide brightness range, were formed into handsheets by the Institute method, employing the Büchner funnel, and by a method which varied only in using the British sheet mold. The data are given in Table IV.

TABLE IV.—EFFECTS OF SHEETMAKING EQUIPMENT ON BRIGHTNESS AND UNIFORMITY

Reference Brightness (Büchner Funnel), points	Deviation from Reference Value with British Sheet Mold, points	Average Deviation of Individual Readings from Mean	
		Büchner Funnel, %	British Sheet Mold, %
59.5	—0.7	1.2	0.7
63.5	0.0	0.6	0.6
66.8	—0.4	0.4	0.6
67.4	—1.3	0.7	0.5
74.6	—0.2	0.3	0.9
75.4	—0.1	0.8	0.7
75.5	—0.2	0.5	0.4
75.6	+0.5	0.5	0.4
76.1	—0.8	0.4	0.4
77.7	—0.6	0.4	0.6
78.4	—0.8	0.5	0.5
79.3	—0.5	0.3	0.4
79.9	+0.3	0.4	0.2
83.3	+0.4	0.6	0.2
83.5	—0.1	0.1	0.2
86.6	+0.1	0.5	0.2
87.7	+0.6	0.6	0.2
88.0	+0.7	0.5	0.2
	Average	0.5	0.4

For most pulps of less than 80% brightness, it appeared that handsheets made in the sheet mold gave a slightly lower brightness reading. This might be attributed to the oxidizing effects of the dilution water already mentioned and/or to contamination of the handsheet when in contact with the bronze wire of the sheet mold. With one exception the pulps above 80% brightness indicated a trend in the opposite direction. This trend could be attributed to the washing effect discussed in the previous section and to the absence of components in the pulp which might be susceptible to the oxidizing or contaminating effects apparently associated with lower brightness pulps.

The average uniformity of brightness readings for a single specimen was approximately the same for the two sheet-forming methods.

The Effect of Pressure

The data of Table V, which are taken from Foote's dissertation *(4)*, show that the pressing step of the sheetmaking operation has a small but definite effect upon reflectivity (the reflectance of an opaque pad). Although Foote's values, which were obtained on the General Electric recording spectrophotometer at 500 mμ, are not identical with brightness which is determined by the General Electric reflection meter at 457 mμ, a similar trend would have been observed if brightness measurements had been made. Contrary to the observations of Day *(2)* Foote's data do not indicate an increase in the effect per unit pressure increment in the higher pressure range. Further data would be required, however, to establish a general trend.

TABLE V.—REFLECTIVITY vs. PRESSURE APPLIED TO MOIST HANDSHEET (4)

Pressure Gage Reading, p.s.i.	R_∞ at 500 mμ, %
10	81.0
25	80.5
50	79.2
100	79.0

Foote explains that the higher forming pressure permits the establishment of more interfiber contacts in the finished sheet, which leads to a decrease in the scattering coefficient and a decrease in reflectivity, in accordance with the Kubelka-Munk formula *(3)*

$$K/S = (1 - R_\infty)^2/2R_\infty,$$

where

R_∞ = reflectance of an opaque pad (reflectivity),
K = absorption coefficient, and
S = scattering coefficient.

Effect of Handsheet Basis Weight

Foote *(4)* obtained the data of Table VI which illustrate the effect of this variable in one series of experiments. These data, which were obtained on handsheets made in the sheet mold according to TAPPI Standard T 205 m-36, indicate a decrease in reflectivity with increasing basis weight. The data of Table VII, which represent the Institute method involving the use of the Büchner funnel, indicate a similar trend; the British handsheet data of Table VII, however, are divided with regard to the direction of the effect.

TABLE VI.—REFLECTIVITY vs. BASIS WEIGHT OF HANDSHEET (4)

Basis Weight g./sq. m.	R_∞ at 500 mμ, %
38	80.1
58	79.7
77	79.2
96	78.6
194	78.9

In general, the data of Tables VI and VII do not support the observations of Day *(2)*, who reported an increase in reflectivity with increasing basis weight. It would seem, however, that the exercise of reasonable care in weighing the pulp specimen from which the handsheets are to be formed would preclude any important basis weight effect.

TABLE VII.—BRIGHTNESS vs. BASIS WEIGHT OF HANDSHEET

Brightness of Handsheets of Standard Basis Weight (100 g./sq. m.), points	Deviation from Reference Value when using Basis Weight of 250 g./sq. m.
52.7 *	—0.6
52.9 *	—0.3
52.3 **	+0.4
55.2 **	—0.3

* Büchner handsheet.
** British handsheet.

Interrelationships among Drainage Rate, Specific Volume, and Brightness

The data of Table VIII, which show the effect of substituting different brands of filter paper for covering the test surface, suggest that the choice of Whatman's no. 1 (the paper now used) might not have been altogether fortunate. Because of the relatively satisfactory uniformity of the Whatman paper as judged by its past performance, however, it was considered unwise to discontinue its use in routine testing until further investigation should definitely prove the superiority of some other paper.

According to the Kubelka-Munk formula an increase in brightness should be attributed either to a decrease in the absorption coefficient or to an increase in the scattering coefficient of the handsheet. A substituted cover paper might decrease the absorption coefficient if it were of higher purity than the cover used as the basis of comparison; on the other hand, it is conceivable that the substituted cover paper might alter the scattering coefficient by changing the nature of the handsheet surface which is to be tested. Further information is needed on this subject.

When the same three filter papers were used both for filtering and for covering the test sheet, the differences in results from those obtained by the standard procedure were of less degree. Since the drainage rates associated with the substituted filter papers were definitely slower, it appeared that this factor might have been responsible. The data obtained when filter paper D was substituted for the standard filtering medium tended to confirm the belief that a slower rate of drainage decreases the handsheet brightness. Such behavior might be attributed to a lessening in degree of washing, which would increase the absorption coefficient, or to a greater compactness of the damp sheet, which would decrease its scattering coefficient.

TABLE VIII.—INFLUENCES OF FILTER PAPER USED IN BÜCHNER FUNNEL AND FOR PROTECTION OF SHEET
(A, B, C, and D are four domestic filter papers)

Filtering Medium	Drainage Time, sec.	Covering Medium	Reference Brightness, points	Deviation from Reference Brightness, points	Reference Specific Volume, cc./g.	Deviation from Reference Specific Volume, cc./g.
Standard	25	A	73.0	+1.0	1.72	...
Standard	25	B	73.0	+1.3	1.72	...
Standard	25	C	73.0	+1.5	1.72	...
A	53	A	73.0	+0.2	1.72	—0.04
B	71	B	73.0	+0.4	1.72	...
C	83	C	73.0	+0.8	1.72	—0.03
Paper towel	15	Standard	73.0	+1.5	1.72	+0.17
D	360	"	75.4	—0.4	...	...
D	180	"	76.9	0.0	1.57	+0.07
D	180	"	89.3	—0.2	...	...

In order to study the influence of the latter factor—i.e., the effect of the compactness of the handsheet—the specific volume of selected handsheets represented in Table VIII was determined. The data are shown in the last two vertical columns of the same table. In view of the absence of any uniform correlation among the factors—drainage time, specific volume, and brightness—one is forced to conclude that whatever effects do exist are so small that they are easily overshadowed by the influence of other variables.

In an attempt to shed further light on the effect of specific volume, a few handsheets selected from those represented by Table IV were similarly evaluated. The results may be summarized as follows:

Reference Brightness, points	Deviation from Reference Brightness Due to Use of British Sheet Mold, points	Reference Specific Volume, cc./g.	Deviation from Reference Specific Volume, cc./g.
67.4	—1.3	2.25	—0.40
75.4	—0.1	2.35	—0.03
88.0	+0.7	2.32	—0.25

As before, the data failed to demonstrate a consistent correlation between specific volume and brightness.

It appeared desirable to study the effect of drainage rate *per se*, unaffected by the influence of type of sheetmaking equipment or filtering medium. By the insertion of suitable orifices into the open side of a tee placed in the line leading from the aspirator to the suction flask, the amount of vacuum applied to the funnel, and, hence, the drainage rate, was varied within fairly wide limits for three representative pulps. As shown in Table IX, the effects of drainage rate upon specific volume and brightness were relatively small; those effects which appeared to exist were not in one consistent direction. It did not appear, therefore, that the behavior of the various filter papers listed in Table VIII could be attributed definitely to either drainage rate or specific volume.

Miscellaneous Factors

In an earlier method for preparing brightness handsheets, the polished chromium-plated disks of TAPPI Standard T 205 m were employed. Since the elimination of these disks would help to increase the utility of the method for those mills not already equipped with the standard strength sheet-forming equipment, a few experiments were performed to determine the feasibility of the idea. The results, which are given in Table X, indicate that the disks did not have any consistent effect upon the brightness readings, and accordingly they were eliminated from the pressing operation in subsequent tests. It should be remarked, however, that the use of the disks is still preferable for special studies which involve determining the brightness of beaten pulps; otherwise, the shrinkage which accompanies the drying of the handsheet causes it to pull away from the rings, and cockling results.

TABLE IX.—EFFECT OF DRAINAGE RATE DURING HANDSHEET FORMATION ON BRIGHTNESS AND SPECIFIC VOLUME
(Standard Conditions: Vacuum—8 inches of mercury; Drainage time —25 seconds)

Vacuum Applied During Sheet Formation, inches of mercury	Drainage Time, sec.	Reference Brightness, points	Deviation from Reference Brightness, points	Reference Specific Volume, cc./g.	Deviation from Reference Specific Volume, cc./g.
0.8	70	73.2	+0.3	1.75	+0.12
0.1	300	73.2	—0.2	1.75	+0.05
0.8	90	74.5	—0.3	1.81	0.0
0.1	240	74.5	+0.1	1.81	0.0
0.8	75	72.8	+0.3	1.75	+0.02
0.1	260	72.8	+0.2	1.75	—0.01

TABLE X.—EFFECTS OF MISCELLANEOUS SHEETMAKING VARIABLES ON BRIGHTNESS

Reference Brightness, points	Changes in Standard Procedure	Deviation from Reference Brightness, points
75.0	Polished disks used	—0.1
76.9	Polished disks used	—1.3
89.1	Polished disks used	+0.3
76.9	No initial suction	+0.6
89.3	No initial suction	—0.2

In an analogous fashion, the specification which calls for the application of suction while the stock suspension is being poured into the Büchner funnel was established. The data of Table X, which illustrate the effect of this factor, indicate that numerically it is relatively unimportant; however, it has been found desirable in practice to apply suction during this step in order to insure that the filter paper is firmly seated in the funnel at all times.

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Water Committee Report, 1941*

By Lewis B. Miller[1], Chairman

TAPPI Standards

The following work has been accomplished in the revision of certain standards by the Water Committee of the TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY.

1. MEASURING, SAMPLING, AND ANALYZING WHITE WATERS. OFFICIAL STANDARD M 400 P-40.

This standard was revised by the Water Committee and has recently been published by the Association in the revised form. The committee is indebted to W. F. Mitchell, member of the Water Committee, for his excellent work in carrying out much of the revision of this standard.

2. FLOW MEASUREMENTS OF WHITE WATERS AND WASTES. OFFICIAL STANDARD E 2 P-41.

By vote of the Association this standard was advanced from a Tentative Standard to an Official Standard in October, 1941.

3. ANALYSIS OF INDUSTRIAL PROCESS WATER. REVISION OF TENTATIVE STANDARD T 620 M-35.

Project 119: This standard is being revised with the objective of including in it rapid methods of analysis which particularly lend themselves to mill control or mill surveys. The revision has been completed and copies of the revised methods have been submitted to members of the Water Committee for their comments and approval. The work of revision has been in the hands of Miss L. E. McGrath, member of the Water Committee, who has done a splendid job of collecting and evaluating rapid methods of water analysis for this standard. The remaining work on this project will be pushed to completion as rapidly as possible.

Monograph on Industrial Water

Project 120: The Executive Committee has authorized, as one of the future activities of the Association, the preparation of monographs upon pertinent technical subjects related to the pulp, paper, and paperboard industry. The Water Committee has been honored by having assigned to it the preparation of the first monograph to be sponsored by the Association. This project has formed the major activity of the committee during the current year. The work has been substantially completed and the monograph is now in press. It is anticipated that copies of the monograph will be distributed to members of the Association within the next few weeks.

Quality of Process Water

Project 175: The Water Committee has as one of its major projects for the coming year the investigation of the quality of water required for the manufacture of the several types of high-grade papers. A comprehensive questionnaire has been prepared for submission to manufacturers of such papers, which has as its primary objective, the collection of information regarding the permissible limits of impurities in process water for the manufacture of these grades of paper. This project has as its final objective the preparation of specifications for process water for use in the manufacture of different types of paper.

Annual Development Report

For its annual development report for 1940 the Water Committee has made a special effort to prepare a comprehensive survey and summary of pertinent information regarding progress in certain phases of the science and technology of water. (*See* "TAPPI Survey of Water Technology, 1940". *Technical Association Papers* 24:447-459, *with* 324 references). With this survey as a background it is planned to present shorter summaries each year which will set forth the most recent developments in the field of water technology.

Water Session at the Annual Meeting

At the Annual Meeting, February, 1941, a program of technical papers was sponsored by the Water Committee. The following papers were presented:

"Water Treatment at Escanaba Paper Mill" by I. W. Johnson.
"Conditioning Water with the Spaulding Precipitator" by Eskel Nordel.
"Feed Water Control in Minnesota and Ontario Paper Mill" by H. E. Einert.
"Water Treatment at the National Container Paper Mill" by R. C. Richter and F. J. Lammers.
"Floc-Forming Chemicals" by Lewis B. Miller.

Water Session Planned

A water session is planned for the Annual Meeting in February, 1942, and a number of excellent papers have been obtained for presentation at this session.

* To be presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y. Feb. 16-19, 1942.

[1] Member TAPPI; Chairman of TAPPI Water Committee; Chemical Engineer, Keasbey & Mattison Co., Ambler, Pa.

The Physical Basis of Standardization of Brightness Measurement*

By J. A. Van den Akker,[1] Philip Nolan,[2] and Willmer A. Wink[3]

It has recently been considered advisable for the TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY to formulate a standard method for the measurement of brightness of pulp and paper. A carefully developed system for calibration and standardization of reflection meters for the measurement of brightness has been in widespread use in the pulp, paper, and paperboard industry here, and abroad, for the past seven years. However, the need for still wider use of this measurement has become evident, and hence the desirability for the creation of a TAPPI method *(1)*.

The accuracy of measurement of brightness is influenced by a set of factors which are so uncommonly complex as to prompt the suggestion that the technical background of the measurement be presented in a brief publication. A substantial amount of work, much of which has been of an original nature, has been accomplished, and it is perhaps timely that this work should now be briefly described. During the first several months of the existence of the General Electric reflection meter ("brightness tester") *(2, 3)* and the scale of brightness established by this instrument, a fairly exhaustive study of instrumental variables was carried out. This work was sponsored by the American Paper and Pulp Association, and has been described in reports to that body and, later, in the form of publications of instrumentation studies *(4)*. This paper discusses the more important aspects of investigations and findings since the beginning of the brightness testing system, particularly as they relate to the setting up of the new TAPPI suggested method.

Discussion of the Meaning of Brightness

The term "brightness" as used in the pulp, paper, and paperboard industry is so incompletely understood that it seems well to devote a few words to a discussion of what it is, and is not. The name itself lends to the confusion seen in the definitions presented in various articles, because the term has been used for many years in several different technical fields to mean different things: brightness of lamps, brightness of stars, brightness of metal, brightness of a colored object, and so on. The last named use of the term has frequently been confused with brightness of the kind which interests the papermaker, but fortunately has been almost universally superseded by the more apt name, "visual efficiency."

The generality of use of the term has caused some persons rather thoughtlessly to define it (as used in the paper industry) as "reflectance". This extremely inadequate definition, improved slightly by the statement that brightness is reflectance to blue light, has led to the manufacture of a number of poor instruments—some homemade, others factory made—and to the consequent difficulties resulting from an inadequate knowledge of the brightness of the pulp or paper. Much latitude is possible in the meager restriction, "blue light". Light which may appear blue to the eye possibly contains sufficient infrared light to cause *half* the instrumental response to be due to the *infrared reflectance* of the test specimen. (Incidentally, it is probable that infrared light is not properly eliminated in the case of any instrument which gives reflectance values numerically much higher than normal brightness, and it may be positively stated that the use of the unaided eye in comparing brightness values is superior to that of such an instrument.) When the infrared light is either eliminated or properly accounted for, it is necessary to define other *spectral characteristics* of importance. In addition to various spectral characteristics, there are a number of *geometrical and photometrical characteristics* which require careful definition.

The assignment of numerical values to all these characteristics is quite arbitrary, but once the arbitrary selection of values has been made, it is necessary to standardize upon that selection if it is desired to maintain a constant scale of measurement. The arbitrariness does not argue against the quantity being fundamental, for a quantity is fundamental if all factors which influence that quantity in a significant manner are completely understood and scientifically defined. In this sense the quantity with which we are concerned is arbitrary, but fundamentally defined.

It will be readily seen that an exact definition of *brightness* involves a number of carefully specified values, and, hence, cannot be given in a few words. The new TAPPI method *(1)* presents a virtually complete definition of the quantity, which, if carefully followed, could result in an instrument agreeing generally with currently standardized instruments to within approximately 0.5%. However, deviations within 0.5% are the result of small uncertainties in all characteristics, and are of an accidental nature. In spite of this, the use of a master instrument and a very carefully operated calibration system have enabled the operators of nearly one hundred reflection meters to maintain their instruments on a common scale to within about 0.3%. If it were intended that brightness should be a purely colorimetric quantity, the generally attained precision of 0.3% might appear ludicrous. Brightness, however, is a technical rather than a colorimetric quantity, and many problems relating to economic structure as well as to technical matters have very definitely proved the desirability of maintaining a precision of the order of 0.3%. It is largely for this reason that the new TAPPI method

* To be presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-19, 1942.

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requires incorporation of a "master instrument" and system of calibration used therewith.

Perhaps emphasis should be given to the statement that brightness is primarily a technical, not colorimetric, quantity. For example, the brightness of a pulp is commonly used in cooking and bleaching studies, although it is rare to find pulp in use by the ultimate consumer without some form of conversion. In general, brightness measures the colorimetric possibilities of a pulp used later in the fabrication of dyed or undyed paper. As it happens, brightness does correlate fairly well with "whiteness", although it is certainly erroneous to claim that brightness is designed primarily to measure this highly subjective property of pulps and white papers. If the brighter of two papers is the less white, it is almost always the case that the observer would have found it possible to make the brighter paper the whiter through a change in the dye formula; however, it is improbable that the less bright paper could be made the whiter to all observers through optimal adjustment of dye contents. The brightness of undyed or lightly tinted white paper is an excellent measure of the quality of the pulp and other components of the furnish, and, hence, the great importance of the quantity to an accurate description of the finished paper.

Spectral Characteristics

The spectral factors influencing reflectance are those relating to the spectral composition of the light and to the spectral characteristics of the photoelectric cell. In view of their importance to accuracy of measurement, the spectral characteristics have been very carefully specified in the new TAPPI method. These characteristics may be enumerated as follows:

1. The variation with wavelength of the radiant power, per unit wavelength range, emitted by the lamp.
2. The variation with wavelength of the transmission of optical filters.
3. The variation with wavelength of the transmission of the glass lenses and other glass optics.
4. The variation with wavelength of the sensitivity of the photoelectric cell (often referred to as "spectral response").
5. The nature of items 2 and 3, in consideration of item 4, between the light source and the test specimen, and between the test specimen and the photoelectric cell.

These instrumental characteristics together with the spectral reflectivity of the test sample will have important influence on the numerical value of the brightness.

The *effective wavelength* of the instrument will depend upon the variation with wavelength of the mathematical product, $E\ T_f\ T_g\ S$, where E is item 1 above, T_f is item 2, T_g is item 3, and S is item 4. As defined here, effective wavelength is that wavelength of monochromatic light for which *(a)* the transmittance of a filter is numerically the same as that obtained in the reflection meter, provided that *(b)* the spectral transmittance of the filter is a linear function of wavelength over the range of wavelengths of the light arriving at the photoelectric cell, and that *(c)* the transmittance is relative to that of a clear (nonselective) filter having the same optical thickness. It may be stated that this wavelength is that corresponding to the spectral centroid of the area lying under the curve representing the product, $E\ T_f\ T_g\ S$. However, the definition as stated is preferred because it is descriptive of the actual manner of determining effective wavelength.

If, as is generally the case, the spectral transmittance or spectral reflectance is not a linear function of the wavelength, there will be a *spectral* discrepancy between the quantities determined with monochromatic and heterogeneous light *(4)*. The nature of this discrepancy is discussed by Davis *(5)*. When, however, the curve is a straight line the transmittance or reflectance determined with the reflection meter will agree, in so far as spectral error is concerned, with the corresponding spectrophotometrically determined quantity using monochromatic light of wavelength equal to the effective wavelength *(6)*. It is interesting to note that this holds when the slope of the curve is great. A proof of the statement follows:

Calling the transmittance of a filter having a linear spectral transmittance, T', the transmittance of the filter as determined by the reflection meter, T, will be

$$T = \frac{\int_{L_1}^{L_2} E\ T_f\ T_g\ S\ T'\ dL}{\int_{L_1}^{L_2} E\ T_f\ T_g\ S\ dL} \qquad (1)$$

In this equation L is wavelength, and L_1 and L_2 are the limits of the wavelength band of light arriving at the photoelectric cell. Since T' varies linearly with wavelength, we may write

$$T' = a + b\,L \qquad (2)$$

where a and b are constants, the latter being the slope. Substitution of Equation 2 in Equation 1 gives the important result,

$$T = a + b\,L_e = T' \text{ at } L = L_e \qquad (3)$$

where L_e is the effective wavelength, and is

$$L_e = \frac{\int_{L_1}^{L_2} E\ T_f\ T_g\ S\ L\ dL}{\int_{L_1}^{L_2} E\ T_f\ T_g\ S\ dL} \qquad (4)$$

that is, L_e is, as previously stated, the spectral centroid or first moment of the area lying under the curve for $E\ T_f\ T_g\ S$.

Determination of Effective Wavelength

There are at least two methods for maintaining the effective wavelength within small limits. The first of these requires holding the individual quantities, E, T_f, T_g, and S within given tolerances. The function E is held within suitably small limits by employing a lamp of a type known to be manufactured in accordance with rigid specifications relating to color temperature, and operating the lamp at a voltage in a specified range. The spectral transmissions of the various optical devices are held within proper limits through measurement of transmission with monochromatic light at a number of wavelengths (usually

with the help of a recording spectrophotometer when the wavelength is greater than 400 mμ). Finally, the relative spectral sensitivity, *S*, of the photoelectric cell is maintained within a specified tolerance through the use of a monochromatic illuminator and a vacuum tube direct current amplifier, or other device for the measurement of small electric current. Then, according to the theory of this method, the effective wavelength of the instrument will fall within suitable small limits.

Early in the standardizing work described herein it was found that this method suffers a major defect. On studying the relationship between the relative spectral sensitivities of a large number of phototubes and the spectral deviations observed in a reflection meter, it was found that only *a poor correlation existed between spectral deviation in an actual instrument and relative spectral sensitivity as determined by the special means involving a monochromatic illuminator and vacuum tube electrometer.* In this work care was exercised in illuminating the cathode of a phototube in a manner geometrically simulating the illumination in a reflection meter. However, the duplication of the exact conditions of illumination could not be effected, and it was believed that the most probable reason for failure of correlation was lack of areal uniformity of relative spectral sensitivity over the cathode of a phototube. Another phenomenon may be involved in this failure of correlation. Ives and Kingsbury *(7)* have shown that a film of photosensitive material on the glass envelope of a phototube will cause the relative spectral sensitivity to vary in a wild manner when the level of illumination and electrical conditions are modified through fairly large limits. In the case of a commercial phototube for which they give data, the sensitivity at 400 mμ increases relative to that at 500 mμ very markedly when the illumination is reduced by a factor of 400. In view of this it is possible—although the phototubes employed in our work are of different anode and cathode construction—that the different conditions of operation of the phototube in the special test and in the reflection meter almost wholly explain the failure of the special test to delimit the relative spectral sensitivity of phototubes *in actual use in a reflection meter.* Accordingly, this first method was abandoned in favor of the second, and wholly satisfactory, method.

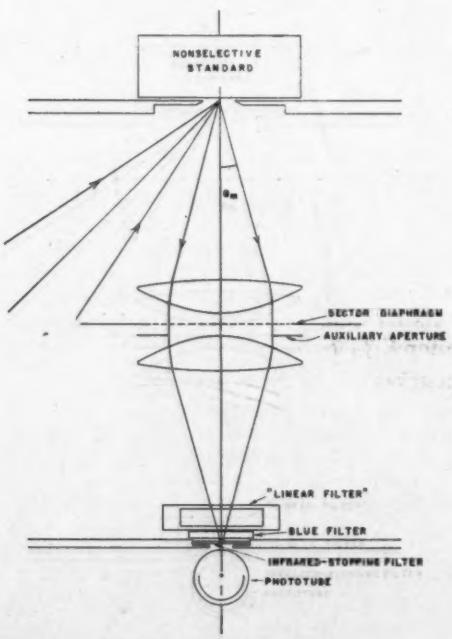

FIG. 1
Schematic Diagram Showing Arrangement for Determination of Effective Wavelength

In the second method a phototube of proper spectral nature is selected by a means which tests a given phototube under normal operating conditions of illumination and electrical connection, *in situ,* as normally employed. This method is based on actual measurement of effective wavelength, and, therefore, possesses the great advantage of directness of measurement. It is clear that any of the vagaries *(7)* of relative spectral sensitivity are obviated.

The measurement of effective wavelength requires the existence of a filter having a linear spectral transmittance, as previously discussed (hereinafter we shall more conveniently refer to such a filter as a "linear filter"). In order that the measurement might be made with maximum accuracy, a linear filter exhibiting large change in transmittance with wavelength is desired. After inspection of a number of filters and colored glasses and liquids, it was found that a nonturbid coffee solution of properly adjusted concentration satisfied all requirements, having an accurately linear spectral transmittance over a wavelength range from below 400 to above 500 mμ. The preparation of a nonturbid solution was, however, a difficult task. Coffee which was considered clear in the ordinary sense was far too turbid for accurate work and, consequently, special means for preparation and treatment had to be developed. Occasionally a satisfactory solution could be obtained by making the coffee with distilled water in a Soxhlet extractor, followed by alkalization and acidification to carry the pH to a value greater than 7.0 and return it to a point less than 7.0.

More recently it was found that degassed and diluted Coca-Cola serves well as a linear filter. Its spectral transmittance deviates noticeably from a straight line when compared with an accurate straight edge, but special experiments and theory *(5)* show that the deviations would have to be much larger than observed before the accuracy would be seriously impaired. The slopes of the spectral transmittances are of the order of 0.45 reflectance unit per millimicron, so that a precision of the order of 0.2 mμ is expected and obtained, and accuracy is estimated to be of the order of 0.5 mμ. Furfuryl alcohol of commercial grade, diluted with dioxane, serves well as a linear filter, but is not convenient in use, and there are undoubtedly a number of other materials (probably brown or amber in color) which would make good linear filters.

In order that evaporation and other effects which might cause inaccuracies due to prolonged time intervals would be nil, the reflection meter and recording spectrophotometer are operated in the same room. The reflection meter is removed from its case and tipped up on its back so that the instrumental panel is vertical and inverted. In this position liquid filter cells are easily introduced to, and removed from, the location shown in Fig. 1. The linear filter is comprised of properly diluted Coca-Cola in a liquid filter cell of good optical property. In order that proper

account be taken for the displacement of rays due to refraction, the transmittance in both instruments is made relative to a nearly identical filter cell filled with degassed distilled water. In the reflection meter these cells are handled, in turn, by means of a special filter cell holder which slides in ways rigidly fastened to a cylindrical light shield which replaces that normally present between the sector diaphragm and the filter wheel. The filter wheel is removed and a blue filter having a spectral transmittance closely agreeing with that which has been arbitrarily adopted as standard is placed over the phototube aperture, as shown in Fig. 1.

With magnesium oxide or equally nonselective material placed over the instrumental aperture and the linear filter in place, the reflectance dial (now a transmittance dial) is set at 100.0 and the plate current is noted. The linear filter is then replaced with the similar cell containing distilled water and the photometer is adjusted to obtain the same plate current, whence the transmittance (uncorrected) is read from the dial. The two cells are then placed in the recording spectrophotometer and the wavelength dial is manually adjusted to yield a transmittance numerically equal to that observed in the reflection meter. Then, knowing *(a)* the wavelength correction to be applied to the spectrophotometer, *(b)* the photometric corrections for both instruments, *(c)* a correction for the nonparallel nature of rays passing through the linear filter when in the reflection meter, and *(d)* the slope of the spectral transmittance curve for the linear filter, the wavelength reading obtained from the spectrophotometer is corrected to give the effective wavelength. These corrections are small and, like the procedure itself, are made easily and quickly.

It is felt that the development of the corrections would be of sufficient interest to justify brief description of the work done on this subject. The wavelength scale of the recording spectrophotometer (which utilizes a 10-mμ band of wavelengths) was checked through the use of known spectrum lines (e.g., those of mercury) by a method relying on the same theory as that forming the basis of effective wavelength determination *(6)*. A given line or multiplet of, for example, the mercury spectrum, excited in a d.c. arc, is selected by the monochromatizing system of the spectrophotometer, and the instrument (General Electric recording spectrophotometer *(8)*) is operated with this spectrum light instead of the light ordinarily originating in the incandescent projection lamp. (The projection lamp is replaced by a mirror inclined at 45 degrees with the vertical and the mercury arc and a suitable lens are placed directly above the lamp house.) Then a filter having a steep, straight spectral transmission curve over the 10-mμ band centering on the wavelength in question is placed in the instrument and its transmission is noted. The incandescent lamp is replaced, and the wavelength dial is manually adjusted to obtain exactly the same value of transmission. Irrespective of the photometric accuracy, the difference between the dial reading and the known wavelength of the spectrum light is directly the wavelength correction to be applied to the spectrophotometer at the part of the scale in question. The accuracy of this method is estimated to be of the order of 0.1 to 0.2 mμ.

The photometer of the spectrophotometer is sufficiently accurate for the purposes at hand if the angle of rotation of the first Rochon prism is proper (a condition which has been found to obtain) and if the "100% adjustment" is made *(9)*. The photometer is checked also through determination of internal consistency of the scale, as by measuring the transmissions of two filters, followed by a measurement of the transmission of the denser filter relative to that of the other filter.

The photometer of the reflection meter is theoretically accurate when a good diffuser like magnesium oxide is placed over the instrumental aperture. However, no real material is a Lambertian diffuser, and, although the sector diaphragm is very accurately constructed and linked with the reflectance dial, it was considered desirable to check the photometric accuracy. Transmission measurements on blackened screens were not considered reliable because the light rays covered a substantial range of angles, and the transmission of an ordinary wire screen is fairly sensitive to angle. A rotating sector was considered, but immediately discarded because this test would include the effect of deviation of phototube response from linearity, a requirement that need not be met in a null method where the illumination of the phototube is steady. Finally, it was decided to construct a special screen having a transmission almost independent of deviations in angle of rays from the normal. This screen is comprised of a pattern of accurately circular holes in a thin sheet, arranged with a unit consisting of three holes centered on the corners of a nearly equilateral triangle of average lengths a, b, and c. Calling the average diameter of the holes D and putting $(a + b + c)/2 = s$, it may be shown that the transmission for normal, parallel light is

$$T = (\pi D^2/8)/\sqrt{s(s - a)\ (s - b)\ (s - c)}.$$

Each hole was bevelled to an edge thin compared with the diameter, and the theory for edge shadowing was developed. Since the screen was placed in the reflected rays, a Lambertian distribution of light in the cone of half angle θ_m was assumed (*see* Fig 1). The theory, which is too lengthy for inclusion here, starts with an expression for the energy transmitted in $d\theta$ at θ. After integration the following result is obtained,

$$T_{av.} = T\left[1 - \frac{4t}{\pi D}\left(\frac{\theta_m}{(\sin\theta_m)^2} - \frac{\sin 2\theta_m}{2(\sin\theta_m)^2}\right)\right],$$

where $T_{av.}$ is the instrumental transmission, T is the transmission for normal, parallel light, and t is the thickness of the edges of the holes in the screen. In the determination of effective wavelength an auxiliary circular aperture is used next to the sector diaphragm which limits the half angle θ_m to 15 degrees.

Using this screen and its computed transmission (which is numerically close to the transmittances involved in determination of effective wavelength), it is found that the photometric correction is quite small, being ordinarily of the order of 0.1 transmission unit.

Finally, a correction is necessitated by reason of the fact that the rays traverse a thickness of the liquid filter greater than the normal thickness. Here, again, the theory assumes a Lambertian distribution of the light reflected from the diffuser over the instrumental aperture, and utilizes the exponential law

of absorption. After integration of the differential equation giving the increment of energy transmitted through the cell by rays lying in $d\theta$ at θ, it is found that the ideal transmission for normal, parallel light is equal to the instrumental transmission multiplied by the factor,

$$1 + \frac{[\log (1/T)](\sin \theta_m)^2}{4n^2},$$

in which T is the approximate transmission (in decimal form), and n is the index of refraction of the liquid. Natural logarithms are employed. When the transmittance is in the range 0.35 to 0.45, the correction of the effective wavelength is of the order of 0.8 mμ.

Using the method described in this section it has been determined that the effective wavelength of a reflection meter standardized for the measurement of brightness is close to 457.0 mμ. The stated tolerance for this wavelength is ± 0.5 mμ.

Nature of the Spectral Product $E\ T_t\ T_g$

A group of differently designed reflection meters having the same effective wavelength but appreciably different filter characteristics would give data showing spectral deviations. This is due to the fact that spectral reflectance and transmission curves usually have fairly substantial curvature in the wavelength range of interest—where the curvature is negligible, discrepancies between the various instruments would not have a spectral component, but such spectral component would be appreciable for many of the pulps and white and near-white papers in existence. The theory of the discrepancy due to curvature of the spectral reflectance curve is discussed in the paper by Davis *(5)*.

While it is impossible to say in a general way how large a spectral error will arise from variations in the product $E\ T_t\ T_g$ when the effective wavelength is constant, it is felt that the product, in arbitrary units, should fit a common function of wavelength to within ± 1.5 mμ. It goes without saying that the spectral product is of a form which is arbitrary from a fundamental viewpoint, and it has been natural to select that form which has been used in the standard measurement of brightness. Expressed in arbitrary units, this form is given by the data of Table I.

TABLE I.—THE PRODUCT $E\ T_t\ T_g$ AS A FUNCTION OF WAVELENGTH

Wavelength (mμ)	$E\ T_t\ T_g$ (Arbitrary units)	Wavelength (mμ)	$E\ T_t\ T_g$ (Arbitrary units)
360	0.0	440	58.6
370	0.1	450	90.5
380	0.8	460	99.8
390	1.9	470	83.5
400	4.4	480	52.0
410	8.3	490	23.1
420	16.2	500	8.0
430	32.1	510	0.0

Other Spectral Factors

The requirement that the spectral product can be "fitted" to the data of Table I is clearly not nearly so drastic as one calling for agreement of the individual functions, E, T_t, and T_g, to specified standards, for the existing requirement allows for some latitude in the individual quantities, and for the possibility of employing "trimming filters"—i.e., filters which may be added to the optical train to improve the agreement between the actual and specified spectral products. For example, if the blue filter transmits relatively too much at the violet end of the wavelength range, a yellow filter of suitable spectral transmission may bring the product function within the tolerance range.

Nothing thus far has been said about the relative positions of the various filters in the optical train. The positioning depends only upon the further requirements that a test specimen should not be exposed in the course of measurement to ultraviolet light of sufficient energy to produce fading, or to sufficient energy of all rays to produce appreciable heating, and that no infrared light of any origin arrive at the photoelectric cell, if the latter is at all sensitive to infrared. In other words, the combination of light source and filters lying between the light source and test specimen should be such that light substantially free of ultraviolet and infrared light falls upon the specimen. In view of the fact that many materials will exhibit a fluorescent infrared light when illuminated with visible light *(4)*, it is necessary to provide an infrared-stopping filter at some point between the test specimen and the photoelectric cell, if, as is so often the case, the latter responds to infrared light. It may be remarked in passing that it is more often the case than not to find that a blue filter will transmit infrared light copiously, even though there may be no suggestion of this from inspection of the spectral transmission curve over the ordinary visible range.

The statements of this section define the spectral aspects of brightness. In the next section the geometrical aspects are discussed.

Geometrical Characteristics

Two instruments might be identical with regard to all spectral factors, and possess equally accurate photometrical systems, yet give badly divergent data on reflectance. Such divergence would be due to dissimilar manner of illuminating and viewing of the test specimen and standard of reflectance. As an illustration, one instrument may illuminate the specimen with light incident at 45 degrees, and accept diffusely reflected rays for measurement at zero angle of incidence (90 degrees with the surface), whereas the other instrument causes the specimen to be illuminated with light at zero angle of incidence and accept for measurement (by means of an integrating sphere) all reflected rays. Even though the spectral factors of these two instruments might be identical, data on reflectance of paper would not infrequently differ by more than 3%.

Such differences are mainly attributable to the fact that most materials reflect light in a manner greatly different from that of the perfect diffuser. Most persons are familiar with the fact that the spatial distribution of light reflected from a glossy paper has a pronounced maximum in a direction near that corresponding to mirrorlike or specular reflection. Surprisingly enough, a typical bond paper (having no appreciable gloss) distributes reflected light with a very strong bulge toward the angle of specular reflection; in fact, the deviation from the perfect diffuser is at most angles greater than that for a supercalendered, glossy paper.

It is clear, therefore, that the mean angle of incidence of light, the mean angle of accepted reflected rays, and the angular range of rays in the incident and reflected light must all be specified. In the instance of the General Electric reflection meter, the conditions for good photometric accuracy include a

small illuminated area. The practical necessity for good light gathering power, coupled with smallness of the size of the illuminated area, results in a fairly substantial range of angles for both the incident and accepted reflected light: The incident rays are confined in a cone of half-angle 11.5 degrees, and the reflected rays accepted for measurement are included in a cone of half-angle 22.5 degrees. The axis of the incident light is at 45 degrees, and that of the reflected rays is zero, with respect to the normal.

Careful special measurements taken with several papers have shown that the half-angle of either of the two cones may be substantially reduced before the reflectance is seriously altered. However, all typical surfaces have not been investigated in this work, and consequently the permissible range of half-angle of the cones has been limited to ± 2 degrees. This range may ultimately prove to be unnecessarily small, but it is certainly safe, and easy to meet in an assembly of optical parts.

Frequent experience in the adjustment of new instruments has demonstrated that close adherence to the specified angles of incidence and reflection is necessary. Hence, the specification of these angles in the suggested method calls for a tolerance of one degree.

An important phenomenon relating to the geometry of an instrument is due to the translucence of the material of either a standard or test specimen. The effect fundamentally may be described by saying that, of the light incident upon a given area s_1, a portion will be reflected from that area, and the remainder of that reflected will emerge from a bordering area s_2; conversely, a portion of light incident upon the bordering area s_2 will emerge as reflected light from the area s_1. As a result, the relative reflectances of translucent materials will depend upon *(a)* the size of the illuminated area, *(b)* the size of the area from which the optical system accepts light for measurement, and *(c)* the manner in which the incident light is distributed over these two areas. In consequence, it becomes desirable to specify the diameters of both the instrumental aperture and the size of the inner disk from which the optical system accepts light for measurement.

The effect becomes larger as the size of the aperture is made smaller, being quite noticeable to the unaided eye in the case of extremely translucent materials when the aperture is of the order of 1 mm. in diameter. Where pot opal glass, an extremely translucent material, is involved, this geometrical effect will account for a total variation of the order of 2% when the instrumental aperture is 0.5 inch. In this case the variation is caused by so-called focusing adjustments, in which the image of the lamp filament is made sharp or diffuse, and moved about in a systematic manner in the aperture (as seen by means of a ground, colored glass). Certain papers, and pulps of high brightness, are sufficiently translucent to make it definitely worthwhile to include the possibility of standardizing upon this effect. It is for this reason that pot opal glass standards have deliberately been retained in standardization procedures, instead of replacing them with more opaque standards. In the absence of such standards there would be little point to focusing adjustments, and, in most cases, little trouble would be encountered. However, in the absence of control of the translucency effect, it would too frequently prove to be the case that discrepancies of the order of 1% would be encountered.

The translucency effect would be smaller for much larger sample apertures, but it must be remembered that a larger aperture would tend to reduce the photometric accuracy. Moreover, with a sample aperture diameter of 2 inches the effect is not negligible. In the case of one instrument having an aperture of about this size, the relative reflectances of paper and pot opal glass were adjusted by means of black paper apertures of various sizes, all large, and substantial modifications could be obtained.

Apparently the only universally satisfactory definition of reflectance would be one which included provision for *uniform* illumination over a large area, and acceptance of rays for measurement from a relatively small area centrally located in the large area, or provided for the opposite arrangement, in which a small area is illuminated and a large area viewed. Until special measurements are made in accordance with this statement, there can be no exact and fundamental meaning to reflectance of a translucent material. In the meantime, the existing system of standardization ensures that agreement between different laboratories may be obtained on the brightness of translucent materials as well as the more ordinary papers, for which the effect is not of importance.

Photometrical Characteristics

The photometrical factors of an instrument require little discussion if the photometric system is basically accurate and properly constructed. The photometric system employed in the reflection meter is of the photoelectric null type. The sensitivity of the phototube influences only the precision or "reproducibility", and the accuracy of measurement is dependent primarily upon the accuracy of fabrication and assembly of the mechanical sector diaphragm. Numerical specifications are to be found in the new TAPPI method, but most of these are inserted to state tolerances for the photometric system of the "master instrument".

Ideally, a sector diaphragm of the type employed in the reflection meter is perfectly accurate only when the light intensity of rays falling on any circle concentric with the axis of the diaphragm is constant around the circle. Since the light reflected from paper and other imperfect diffusers does not give rise to this condition, one theoretically expects the photometric accuracy to depend upon the orientation of the sector openings, their number, and upon the diffusing characteristics of the test specimen. Therefore, the orientation and maximum size of the two sector openings are carefully specified in the new standard method. Actually, tests on internal consistency and with the special screen described in the section on spectral characteristics show that the photometric accuracy remains good when imperfect diffusers like bond paper are placed over the instrumental aperture.

Standardization

The definition of brightness would not be complete without the statement that the ultimate standard of reflectance is a properly prepared surface of magnesium oxide *(10)*. Magnesium in the form of short lengths of mechanically abraded and cleaned ribbon is burned with the flame a few inches below an extremely flat surface of magnesium carbonate of exceptionally high reflectance. This is carried out until several surfaces have been coated to a thickness

of about *1 mm.* These coated surfaces are carefully compared with magnesium carbonate on both the recording spectrophotometer and the reflection meter. In the case of the latter instrument shims of suitable thickness must be used to offset the compressibility of the magnesium oxide layer. Any obviously inferior surfaces of magnesium oxide are rejected and an average is obtained. Then, taking the reflectance of the magnesium oxide as 100.0%, the reflectances of a set of vitreous enamel secondary standards are obtained, and any necessary changes are made. One or more of these enamel standards are employed to evaluate the many paper and pot opal glass standards which are issued at monthly intervals to the mill laboratories.

Although the preparation of the ultimate standard is not an "art", an uncommon amount of care and awareness of possible sources of error must be exercised in the work. It is probable that in many laboratories this important aspect of the standardization work could not be carried out with adequate accuracy, and that in the absence of a regular source of working standards typical discrepancies would be of the order of 2%. It was because of the general desire to retain the present system of standardization and calibration—and condition of general agreement between the many reflection meters in use—that a detailed description of a calibrating and standardizing system, including a master instrument, was included in the new TAPPI method.

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Anheuser-Busch, Inc. Joins TAPPI

Anheuser-Busch, Inc., has become a Sustaining Member of the Technical Association of the Pulp and Paper Industry. Anheuser-Busch, Inc., became a member of the corn products industry in the year 1923, when a plant was built in Saint Louis to produce corn syrup and corn sugar. The venture met with success from its inception and additional manufacturing facilities soon became necessary to increase production and in turn to meet trade demands for corn syrup and corn sugar.

A further expansion occurred in 1937 with the establishing of a dry starch and dextrine department, a natural development since a highly refined wet starch is the immediate raw material from which corn syrup and sugar are made. The most modern type of equipment was installed and the entire plant output soon found a ready market in the food industries.

The plant was again enlarged early in 1941 to provide for the production of industrial starches for the paper and textile industry; thus it will be understood that Anheuser-Busch is not new in the manufacture of starch from corn, but only recently has this starch been made available to the paper industry.

The Corn Products Division of Anheuser-Busch is operated as an independent Company unit; it is adequately staffed with men of wide experience in the starch industry and has its own control and research laboratories, in addition to having all of the technical facilities of Anheuser-Busch, Inc., at its disposal for special problems.

Estimating for Printers

The Fred W. Hoch Associates, Inc., have recently published a useful and interesting revision of its 267 page book entitled the Standard Book on Estimating for Printers. It is designed to give a comprehensive explanation of all the operations entering into the printed product for the student of estimating and printing.

The order followed in this book is one closely allied to the proper order of routing work through a printing plant. Paper is the first practical problem offered. In this chapter such matters are considered as paper grain, comparative weight of odd sized sheets, standard sizes, estimating paper stock, spoilage allowance, stagger cutting, broken packages.

Other subjects covered are slug composition and typesetting, monotype composition and copyfitting, page make up, imposition and lockup, presswork make-ready, press running, ink and bronzing, process printing, cutting, folding, stitching and trimming, bindery operations, envelope scale showing number cut from the sheet, overlays and photoengraving.

Estimating for Printers may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York, N. Y., at $3.75 per copy.

Luncheons During TAPPI Meeting

The luncheon speaker at the annual meeting of the Technical Association of the Pulp and Paper Industry will be Sir Herbert Gepp, managing director of the Australian Paper Mills. Mr. Gepp's subject will be The Future of Economic Man. The luncheon will be held at the Commodore Hotel, New York, N. Y., on Thursday, February 19, 1942. At this luncheon the TAPPI Medal for outstanding contributions to the technical advancement of the pulp and paper industry will be presented to Robert B. Wolf, Manager of the Pulp Division, Weyerhaeuser Timber Company, Longview, Wash. The presentation will be made by Ralph A. Hayward, Vice President of the Technical Association. The pulp and paper alumni of the University of Maine will hold a luncheon in the South Room of the Commodore Hotel, New York, N. Y., on Wednesday, February 18th.

The graduates of the Massachusetts Institute of Technology in the paper industry will hold a luncheon at the M.I.T. Club, New York, N. Y., on Tuesday, February 17.

Maine Men to Meet February 18

The 12th annual "Paper Week" luncheon of University of Maine alumni and friends will be held at the Commodore at 1:00 P.M., Wednesday, February 18, 1942. This get-together of Maine men will, as usual, be informal, and all alumni in New York and vicinity are urged to attend and bring friends. Reservations may be made by writing Clifford Patch, Eastern Corporation, Bangor, Maine.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

Importers may have their shipments listed in these columns by submitting records of imports to this publication.

NEW YORK IMPORTS

WEEK ENDING JANUARY 24, 1942

SUMMARY

Newsprint .....4,203 rolls
Tissue paper .....31 cs.

NEWSPRINT

——, ——, ——, 4,203 rolls.

TISSUE PAPER

G. F. Malcolm, Co., ——, ——, 31 cs.

RAGS, BAGGINGS, ETC.

National City Bank, ——, ——, 4 bls. rags.
Bank of Nova Scotia, ——, ——, 70 bls. old rags.
Bank of New York, ——, ——, 3 bls. old rags.
——, ——, ——, 61 bls. rags.
——, ——, ——, 212 bls. cotton linters.
Lush Cotton Products Co., ——, ——, 28 bls. cotton residues.
Schimmel Trading Corp., ——, ——, 291 bls. cotton residues.
Volkart Bros., ——, ——, 100 bls. cotton waste, 300 bls. cotton picker waste.

CASEIN

American Plastics Corp., ——, ——, 200 bags (unground rennet).
Casein Co. of America, Inc., ——, ——, 85 bags (ground).
——, ——, ——, 417 bags (ground).
——, ——, ——, 100 bags, 5,000 kilos.
Banco Londres, ——, ——, 500 bags, 25,000 kilos.
——, ——, ——, 5,271 bags, 297,677 kilos.
J. H. Schroeder Bkg. Corp., ——, ——, 417 bags, 25,028 kilos.

BONE GLUE, ETC.

Anglo American Oilex, Inc., ——, ——, 243 bags bone glue.
Bank of New York, ——, ——, 1,269 bags bones.
——, ——, ——, 1,084 bags bones.

BOSTON IMPORTS

WEEK ENDING JANUARY 24, 1942

——, ——, ——, 109 bls. glue stock.

N. E. Paper Men To Meet February 4

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., January 26, 1942—The annual meeting of the New England Paper Merchants Association, Inc., is to be held Wednesday evening, February 4, in the "Old Boston Room" of the Parker House.

Besides the election of officers, there will be a preview of what to expect at the National Convention in New York, February 16 to 19.

The guest speaker is to be the London barrister Victor Coen, whose subject is "Air Raids on London." Mr. Coen is an outstanding member of the London Chancery Bar, a graduate of Cambridge University and McMaster University of Canada, 1916. He has lectured extensively in Canada and the Eastern States. His travels in Europe took him frequently to Germany, France, Belgium, Holland and Switzerland.

Mr. Coen has captivated his audiences with his charm and delightful personality and has held their rapt attention by the interest of his remarks and his fine delivery. Several members of the association have heard him speak not only once, but several times and state that they would go a long distance to hear him again. Mr. Coen will answer the question: "What should we do about bombing?"

Kalamazoo Elects President

KALAMAZOO, Mich., January 26, 1942—At the meeting of the Kalamazoo Paper Company, Kalamazoo, Mich., several promotions and assignment changes were made following the resignation of Alfred E. Curtenius as president of the concern. Curtenius, president of the company since 1932, submitted his resignation at the annual directors' meeting Wednesday afternoon, and George T. Jubb, secretary about 10 years, was advanced to president and general manager.

Mr. Curtenius immediately was named chairman of the board, and Bert H. Cooper, treasurer and purchasing agent, was moved up to a vice-presidency. James A. Wise was elected vice president in charge of production, and F. B. Curtenius was elected secretary-treasurer. Cooper will continue in charge of purchasing.

Kalamazoo Paper Company, stockholders added Messrs. Jubb, Cooper and Wise to the board of directors, and named A. E. Curtenius, F. B. Curtenius, Charles S. Campbell, A. B. Connable, C. H. Kleinstuck, Woodbury Ransom, Sherwood Waldron, and W. K. Wallace to carry over on the board. Messrs. Waldron and Wallace are of New York.

F. L. Curtis Made Vice President

Sumner Simpson, president of Raybestos-Manhattan, Inc., recently announced the appointment of F. L. Curtis, general manager of the Manhattan Rubber Manufacturing Division, as vice-president of Raybestos-Manhattan, Inc. Mr. Curtis has been associated with the company since its beginning in 1893. Mr. Curtis will continue as treasurer of Raybestos-Manhattan, Inc.

H. E. Smith, assistant general manager of the Manhattan Division, was appointed to succeed Mr. Curtis as general manager. J. H. Matthews, assistant factory manager, is now assistant general manager. Both Mr. Smith and Mr. Matthews have been with the Manhattan Division for many years.

New York Paper and Pulp Market Review

OPA Announces Pulp Allocation Schedule In Effect This Month — Kraft Paper and Container Board Demand Very Heavy — Old Rope Ceiling Prices Possible—Other Material Markets Unchanged.

Office of the PAPER TRADE JOURNAL
Wednesday, January 28, 1942.

Wholesale demand for leading grades of paper continues to be reported at a very high level, with production figures indicating no decline. Reports received from many manufacturers' representatives, jobbers, and general paper merchants this week, reflect further improvement in mill deliveries. Trade reports indicate signs of a decline in orders for some types of paper. This has been quite generally expected to occur, as the all-out war effort expands to curtail through priorities and other governmental regulation, the production of the less essential goods and products for strictly civilian consumption.

The index of general business activity rose to 137.2% for the week ended January 17, from 132.1% for the previous week, compared with 122.3% for the corresponding week for last year. Paper board production was little changed for the week.

Paper production for the week ended January 17 was estimated at 103.9%, compared with 89.3% for 1941, with 90.1% for 1940, with 78.0% for 1939, and with 66.0% for the corresponding week for 1938.

Paper board production for the week ended January 17 was 102.0%, compared with 78.0% for 1941, with 72.0% for 1940, with 65.0% for 1939, and with 58.0% for the corresponding week for 1938.

Demand for wrapping paper and paper board continues to lead other grades. The curtailment in advertising this year, for the reason that many concerns have little if anything to sell, is expected in some quarters to affect the sales volume of some book papers. The current falling off in demand for some coated book papers, is cited by some in the trade as indicating this trend. Leading specialty papers are reported in some quarters as being in good demand. It is also reported that the anticipated inadequacy of the supply of solid fiber board, is beginning to be more and more experienced, as war requirements increase.

No important price changes have been reported this week. All quotations are firm.

Rags

Mill buying is reported steady in good volume for cuttings. No important change from prevailing, average, representative quoted market prices has been reported this week.

Demand for roofing rags is active, with prices firm and unchanged.

Old Rope and Bagging

Dwindling supplies of old Manila rope has culminated in a tight situation in this material. The tendency is to force prices up and comment is heard in this market that the OPA may soon consider it advisable to place ceiling prices on old Manila rope. No definite or official information on this possibility, has been received at this date. All prices are firm.

Trading in scrap bagging is less active this week. Reports indicate that some quarters of the trade expect the OPA may place ceiling prices on burlap and domestic gunny. Prices are now nominal on all grades.

Old Waste Paper

The paper stock market is strong with mill demand for some grades of waste paper very heavy. The abolishment of the grade, "old kraft corrugated boxes", and the retention of one grade, "old corrugated boxes", is reported to be making it more difficult for some mills to get supplies suitable for the grades of board they manufacture. OPA prices are reported as being well maintained.

Twine

No important change is reported in the prices of twines this week. As the lack of shipping facilities is an obstacle to the free movement of imports of fibers, uncertainty as to the supply of some grades of twine in the future is increasing. All prices are firm.

Reports Against Ohio Wax Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., January 28, 1942—Trial Examiner Samuel Edes of the National Labor Relations Board has announced his intermediate report recommending the Ohio Wax Paper Company, Columbus, Ohio, to cease discouraging membership in the International Brotherhood of Papermakers, Columbus, and to reinstate with back pay three employees discharged because of their efforts on behalf of the Brotherhood.

At the same time the examiner recommended that the unfair labor practice complaint be dismissed insofar as it alleged that the company had discriminated against Tom H. Blackburn in violation of Section 8(3) of the National Labor Relations Act.

The examiner found that three of the company's chief officials and supervisors undertook a campaign to "forestall" the possibility of union organization during June of last year when the company's president received notice that employees at nearby plants were organizing.

Upon charges filed by the Columbus Federation of Labor on behalf of the International Brotherhood of Papermakers, the Labor Board issued its complaint on October 25. Public hearing was held at Columbus on November 6-11 before Trial Examiner Edes.

West Virginia Increases Output

Thomas Luke, president of the West Virginia Pulp and Paper Company, informed stockholders at the annual meeting that the company produced 996,000 tons of paper and pulp in the year ended on October 31, 1941. This compared with 880,000 tons in the previous fiscal year. Operations in the last fiscal year were equal to 92% of capacity, against 82% the year before, Mr. Luke said.

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
San Francisco, Cal.

Manufacturers of

ENGLISH FINISH SUPERCALENDERED
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KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

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Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina

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JOB LOTS—SECONDS—SIDE RUNS

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—because we can take any QUANTITY, however large.

—because we can pay ATTRACTIVE PRICES.

Livingston & Southard Paper Company

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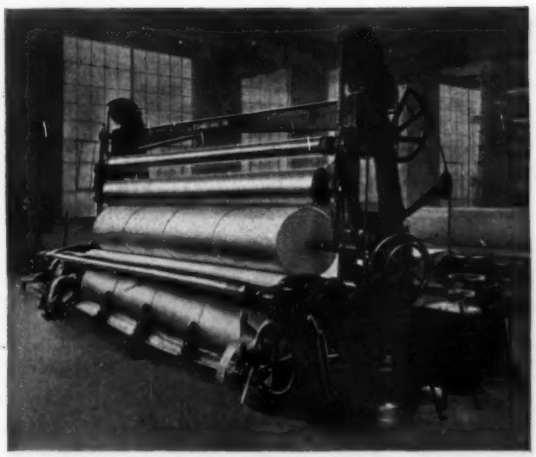
Telephone, "WHitehall 4-4183"

Ask yourself these questions:

When considering the value of a slitter and roll-winder, check the following points:

1. Is it easy to operate and economical to maintain?
2. Will the rolls produced on the winder be perfectly wound, straight on the ends, and free from slitter cracks at the edges?
3. Will the rolls stand the bumps and jolts of shipping and handling?
4. Will a carload of these rolls contain more actual weight of paper per car and so save on freight weight?
5. Will the rolls take up the minimum of storage space per ton and the minimum of wrapper tare per ton on account of greater weight per roll?



6. Will the paper on these rolls unwind smoothly, and at high speed, clean to the core?

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MID-WEST OFFICE: Harris Trust Building, 111 West Monroe St., Chicago, Ill.

Slitting and Roll-Winding Machine Headquarters

CAMACHINE

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL
Wednesday, January 28, 1942.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton. f.o.b. works. Demand reported good for the week.

BLEACHING POWDER—Quotations on bleaching powder are firm. Demand reported heavy for the week. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are firm, under a good demand for the current week. Standard domestic casein, 20-30 mesh, is currently quoted at 30 cents per pound; 80-100 mesh, at 30½ cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, is currently offered at 27 cents per pound. No quotations in French casein.

CAUSTIC SODA—Quotations on caustic soda are firm and continue unchanged at prevailing market prices. Demand reported heavy. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, car lots, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported moderate at this date. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Demand very heavy. Market under mandatory priority ruling. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week with prices lower on some grades. "G" gum rosin is currently quoted at $3.21 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $3.21 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $3.49 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand active for the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk; chrome cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported heavy for the week. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported good for the current week. The commercial grades are currently quoted at $1.15; iron free at $1.75 to $1.85 per 100 pounds. All prices in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$6.00	@	$7.00
Superstandard	5.25	"	6.25
Northern Standard Wrapping	4.75	"	5.25
Standard Wrapping	4.75	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*45.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	*80.00	"	—

*OPA Maximum Prices.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds			Ledgers		
100% Rag Ext. No. 1	$40.25	@	$47.25	$41.40	@	$48.50
100% Rag	32.20	"	37.75	33.35	"	39.25
85% Rag	....	"	....	32.20	"	37.75
75% Rag	24.75	"	29.00	25.90	"	30.50
65% Rag	....	"	....	22.80	"	27.75
50% Rag	18.70	"	22.75	19.90	"	24.25
25% Rag	16.40	"	20.00	17.55	"	21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds			Ledgers		
No. 1	$10.55	@	$12.75	$11.70	@	$14.25
No. 2	9.65	"	11.75	10.80	"	13.25
No. 3	9.20	"	11.25	10.35	"	12.50
No. 4	8.90	"	10.75	10.05	"	12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	No prices		
Dry	No prices		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	45.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.62½	@	4.71
Prime Qualities— Easy-Bleaching Sulphite	3.17½	"	4.21
Strong Unbleached Sulphite	3.17½	"	4.21
News Grade, delivered Unbleached Sulphite	63.75	"	67.75

(On Dock, Atlantic Ports)

Kraft Bleached	4.12½	"	—
Kraft Light & Strong	No price		
Kraft No. 1	No prices		
(Delivered)			
Kraft Domestic and Canadian	3.00	"	4.00
(Delivered)			
Soda Bleached	3.30	"	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	8.00	@	8.25
Silesias No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cutings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.90	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.50	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—

*OPA Maximum Prices.

Foreign Rags

All prices nominal

New Rags

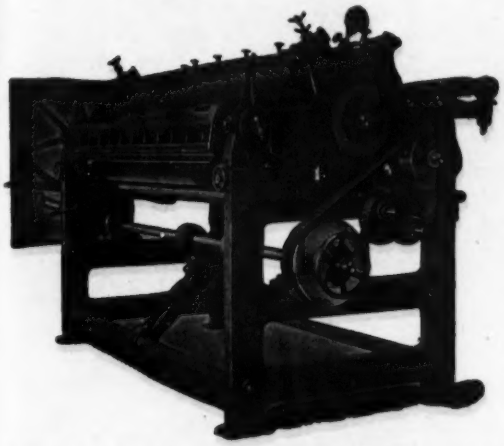
New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

MODEL 28

ROLLER BEARING CUTTER



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AMES Thickness Measure No. 25

This compactly designed instrument (the only one of its kind made) meets every demand for a neat pocket gauge to measure thicknesses with speed and accuracy.

$10.50
FULLY GUARANTEED

B. C. AMES CO.
WALTHAM, MASS.

CHEMIPULP PROCESS INC.

CHEMICAL PULP MILL ENGINEERS

Chemical Pulping Processes ☆ Operating Surveys
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Paper Bag Machines, Aniline & Oil-Ink Presses, Waxing, Gluing, Varnishing, Laminating Machines.

POTDEVIN MACHINE CO.
EST. 1893
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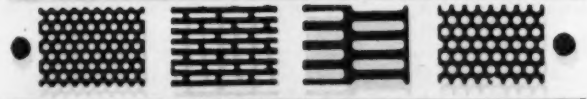
POTDEVIN

SCREENS of Perforated Metal



The Harrington & King PERFORATING CO.
5652 Fillmore St. Chicago, Ill. 114 Liberty St. New York, N.Y.

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging
(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light....	4.25	"	4.50
Wool Tares heavy..	4.50	"	4.75
Bright Bagging.....	3.50	"	3.75
Manila Rope			
Foreign	6.50	"	6.75
Domestic	6.50	"	6.75
Jute Threads.....	4.00	"	4.25
Sisal Strings.....	2.75	"	3.00
Mixed Strings.....	1.10	"	1.20

Old Waste Papers
(F. o. b. New York)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts.....	3.12½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, one cut.....	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings..	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Mixed Books.....	1.07½	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut..	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas.....	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft.	2.50	"	—
New 100% Kraft Corrugated Cuttings..	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Jute Corrugated Cuttings	.90	"	—
Old Corrugated Containers	.82½	"	—
Box Board Cuttings.	.72½	"	—
White Blank News.	1.65	"	—
Overissue News.....	.85	"	—
No. 1 Baled News..	.75	"	—
No. 1 Mixed Paper.	.70	"	—

Twines
(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp.....	.21	"	—
Fine Polished—			
Fine India.....	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers.....	.17	"	—
Tube Rope.....	.19	"	—
Wall Paper.....	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope...	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java.....	.18	"	—
Mex. Sisal.....	.16	"	—
Manila	.26	"	—

PHILADELPHIA

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.07¼	@	.07½
New White No. 2.	.04½	"	.05
Light Silesias.....	.04½	"	.04¾
Silesias, No. 1....	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached..	.07¼	"	.07½
Washable Prints...	.03¼	"	.03½
Washable No. 1..	.02	"	.02¼
Blue Overall.....	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales....	.03¼	"	.03½
New Black Soft...	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¼
No. 2 Mixed.....	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas.....	.04¾	"	.05¼
New Black Mixed.	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1.	3.20	"	—
Miscellaneous No. 2.	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1.....	Nominal		
Domestic No. 1...	1.55	"	—
Domestic No. 2...	1.45	"	—
Roofing Bagging..	1.35	"	—

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Manila Rope.....	5.00	"	5.50
Sisal Rope.....	3.75	"	—
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	1.75	"	1.80
Wool Tares, heavy...	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers
(F. o. b. Phila.)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
Soft White Shavings, one cut	2.87½	"	—
White Blank News..	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger.	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Box Board Cuttings.	.72½	"	—
Jute Corrugated Cuttings	.90	"	—

BOSTON

Old Papers
(F. o. b. Boston)
OPA Maximum Prices

No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Hard White Shavings, ruled...	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut.....	2.87½	"	—
Hard White Envelope Cuts, one cut.....	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft.	2.50	"	—
Mixed Kraft Env. & Bag Cuttings.....	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
New Manila Envelope Cuts, one cut.....	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News..	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper.	.70	"	—
Overissue News.....	.85	"	—
Box Board Cuttings.	.72½	"	—
Old Corrugated Containers	.82½	"	—
Jute Corrugated Cuttings	.90	"	—

Bagging
(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	3.75	@	4.00
Sisal Rope.....	4.00	"	4.25
Mixed Rope	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.25
Soft Jute Rope.....	5.25	"	5.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.75	"	7.00
Jute Carpet Threads.	3.25	"	3.50
Bleachery Burlap....	7.00	"	7.75
Scrap Burlap—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Scrap Sisal.....	3.75	"	4.00
Scrap Sisal for Shredding	4.50	"	4.75
Wool Tares—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Aust. Wool Pouches.	5.25	"	5.50
New Burlap Cuttings	4.50	"	5.00
Heavy Baling Bagging	5.25	"	5.50

Paper Mill Bagging..	2.75	"	3.00
No. 2 Bagging.....	1.35	"	—

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.04½	@	.04¾
Fancy Percales....	.04¼	"	.04½
New White No. 1.	.08¼	"	.08½
New Light Flannelettes	.06	"	.06¼
Canton Flannel, Bleached	.08¼	"	.08½
Underwear Cutters, Bleached	.08	"	.08¼
Silesias No. 1.....	.04½	"	.05
New Black Silesias..	.03¾	"	.04
Red Cotton Cuttings	.03¼	"	.04
Soft Unbleached....	.08¼	"	.08½
Blue Cheviots.....	.04¾	"	.05
Fancy	.02¾	"	—
Washable	.01¾	"	—
Cottons—According to Grades			
Blue Overalls.....	—	"	.05½
New Black, Soft..	.03¼	"	.04
Khaki Cuttings.....	.02¼	"	.02¾
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.02	"	.02¾
New Canvas	.06	"	.06½
B. V. D. Cuttings...	.07¾	"	.08

Domestic Rags (Old)
(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls ..	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.55	"	—*
No. 2.....	1.45	"	—*
No. 3.....	1.35	"	—*
No. 4.....	1.35	"	—*
No. 5, Quality A..	1.35	"	—*
Quality B..	1.20	"	—*
Quality C..	.95	"	—*

* OPA Maximum Prices.

Foreign Rags
(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons.....	(nominal)
Dutch Blues.....	(nominal)
New Checks and Blues	(nominal)
Old Fustians.....	(nominal)
Old Linsey Garments.	(nominal)
New Silesias.....	(nominal)

CHICAGO

Waste Paper
(F. o. b. Chicago)
OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled.	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines.....	1.57	"	—
White Blank News..	1.65	"	—
Mixed Kraft Env. & Bag Cuttings..	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News.....	.85	"	—
No. 1 Baled News..	.75	"	—
No. 1 Mixed Paper..	.70	"	—
No. 1 Roofing Rags..	1.50	"	—
No. 2 Roofing Rags..	1.45	"	—

Philip M. Judd Heads Judd Paper Co.

The Judd Paper Company held its annual meeting at Holyoke, Mass., January 16 and elected Philip M. Judd president to succeed Clifford K. Judd recently deceased. The other officers of the company are as follows:—William H. Lippmann, vice president; George Barnett, treasurer; W. Raymond Whitehouse, assistant treasurer and Cecil C. Rice, clerk.

The members of the board of directors are as follows:—Philip M. Judd, William H. Lippmann, George Barnett and Arthur N. Smith. Mr. Smith has been with the corporation fifty years and has been a member of the board of directors for the past eleven years.

At the meeting the treasurer reported a satisfactory year of business.